

RELATIONSHIPS OF STUDENT BEHAVIORS WITH CLASS  
PERCENTILE RANK OF IOWA HIGH SCHOOL SENIORS

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by

Robert A. Olson


May 1989


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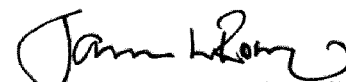
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# RELATIONSHIPS OF STUDENT BEHAVIORS WITH CLASS PERCENTILE RANK OF IOWA HIGH SCHOOL SENIORS

An abstract of a Dissertation

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May 1989

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The Problem. Low academic performance in schools cannot be resolved by the educational systems alone. Individual student behaviors, school factors and attitudes of students' families have been found to be related to achievement. Significant relationships between changeable student behaviors and student academic performance exist. Changing those factors could prove to be conducive to the improvement of student academic performance .

Procedures. This study examined student behaviors of high school seniors in North Central Iowa. Students were selected from one of four size categories, utilized by the Iowa High School Athletic Association. A survey was utilized to gather data concerning seven student behaviors described in the review of literature. The behaviors categories included attendance, television, homework, reading, job, co-curricular participation, and rules.

Findings. This study utilized an ex-post facto research design. Multiple regression analysis was performed to determine relationships between behaviors and academic performance. Stepwise regression analysis was conducted to determine ranked strength of relationships between behaviors and academic performance. R-squared value of all seven behaviors forced into the regression equation was .331. Three behaviors, participation, homework, and rules, were significantly related to class percentile rank with P-values of .0001, .0001, and .0187, respectively.

Conclusions. It was evident that student behaviors do significantly relate to class percentile rank. Nearly one-third of the variability of class percentile rank was explained by the seven student behaviors selected for this study. With one-third of the variability of class percentile rank explained by seven behaviors of this study, it appears that collaborative efforts of schools and parents to improve student performance would be most effective.

Recommendations. It is the task of the school systems to capitalize on public opinion which demands improvements in student academic performance and foster cooperative relationships between home and school. This study suggests that parents encourage students to participate in those behaviors which positively relate to higher academic performance and discourage student behaviors which negatively relate to academic performance.

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## CHAPTER 1

### Introduction

#### Background of the Problem

The early 1980s marked a new era of public discontent for the American educational system. The decade of the 80s brought with it a gradual shift from complacency to public discontent, focused on school effectiveness. Since the inception of the annual Gallup Polls of public's attitudes toward the public schools in 1968, general public dissatisfaction with education and perceived need for improvement has been reported. The appearance of educational reports critical of the American educational system, gained the immediate attention of the American people, for they substantiated what was generally believed to be true. The results of the 1983 Gallup poll, conducted two weeks after the release of, A Nation at Risk, a report by the National Commission on Excellence in Education, were very similar to the results of the 1982 poll. It was apparent that the American educational system was consistently receiving poor marks from its public.

Reports cited falling standardized test scores, social promotion and poor performances at international academic competitions as indications of a failing educational system. A Nation at Risk made a big impression on the American people. Unlike other reports supported by corporations or private organizations, A Nation at Risk had the endorsement of the President of the United States. A nation listened as commission representatives told the

President that the American educational system was mediocre and progressively getting worse. It did not seem to matter to Americans that the commission appeared to have been conceived for political reasons, to usher in support for tuition tax credits and a voucher system for schools. Boyer identified the administration's insensitivity to the report's findings by noting the president's reaction shortly after the report was released.

Most disappointing of all have been the confusing distracting signals from Washington, D.C. Secretary of Education Terrel Bell has supported education, but, at a forum in Indianapolis last December - a kind of grand finale for the National Commission - President Reagan declared that we don't need more money; we need more discipline in the public schools. This emphasis is consistent with the programs of the Reagan Administration, whose record on publicly funded schools deserve a failing grade. For two consecutive years President Reagan sought to cut federal support for education, while advocating prayer in schools and tax relief for parents with children in privately funded institutions. (Boyer, 1984, p. 528)

Although the commission's report identified a number of areas needing the immediate attention of the American people, tuition tax credits and vouchers were not among them. Bell identified the president's true commitment to improving the American education system.

The president is firmly committed to tuition tax credits, and we will continue to press [for] Congressional approval of them. Parents ought to have the fundamental right to send their children to schools that reflect their own moral values and educational preferences. However, many low- and middle-income families cannot afford the double burden of paying private school tuition as well as state and local taxes that support public education. Private schools should be accessible to those families who would prefer to send their children to them. Moreover, we believe that alternatives to public education will strengthen public education. (Bell, 1984, p. 533)

The commission chosen by Education Secretary Bell, appeared to be biased. The public school system, of which the commission was most critical, failed to be represented by a single public school educator. Statistics in the report were carefully chosen to support its case of a deteriorating educational system. One example concerned falling SAT scores. In 1977, SAT scores stopped their downward trend, but information cited by the commission was from 1963 to 1977, when scores had dropped 49 points.

After the report was presented to the president, he began to promote a voucher system, allowing parents to send their children to the school of their choice. This issue was never addressed in the report. It appeared that the commission was developed for a political end. However, the American people were not particularly interested in vouchers (Gallup 1983, p. 38). What Americans did hear was that the American educational system was failing. The report appeared to generate as much public interest for education as did Sputnik of the early 1960s.

Americans generally agreed with the President's Commission on Excellence in Education before the report was released. "The Fifteenth Annual Gallup Poll of the Public's Attitudes toward the Public Schools" indicated "that the Commission report had not substantially changed the views of the public about public education" (Gallup, 1983, p. 34). Americans felt the public schools were lacking and wanted schools to be more accountable to the public for student acquisition of knowledge. The public wanted school improvement and evidence to document the school's progress. The American public wanted



to be assured that schools hired qualified, talented teachers. It was reported that the U.S. public "strongly favors the idea of a state board examination for teachers. Eighty-nine percent of the public support the idea" (Gallup, 1984, p. 107). It appeared that Americans supported quick solutions for complex problems. The reaction to the President's Commission and other educational reports was to throw solutions at a problem not clearly understood.

Americans' faith in testing generated support for competency testing for students and teachers. Other recommendations also included more homework for students, seven-hour school days and 200 to 220 day school years (National Commission on Excellence, 1984, p. 75). Merit pay for teachers which paid better teachers more money, was also strongly supported.

The following examples of solutions designed to improve educational programs were observed by the author the last thirteen years, in work done with the federal government, Department of Education, school accrediting agencies and local school boards.

1. Higher graduation requirements.
2. Higher standards for school accreditation. (State & NCA)
3. Longer school day. (National Commission on Excellence, 1984, p. 75)
4. Longer school year. (National Commission on Excellence, 1984, p. 75)
5. Higher teacher salaries.
6. Higher requirements for teacher certification. (Iowa)
7. Back to basics. (National Commission on Excellence, 1984, p. 75)
8. Vouchers. (Bell, 1984, p. 533)
9. Higher pay to high demand teachers in math and science.
10. More homework. (National Commission on Excellence, 1984, p. 75)

11. Attendance requirements for ADC (Wisconsin)
12. Attendance requirements for course credit.
13. Attendance requirements for continued course enrollment.
14. Attendance requirements for graduation.
15. Promotion based on examinations.

The assumption that poor student performance is solely the result of poor educational programs is flawed. Test scores are designed to measure student academic performance, not school performance. Poor academic performance may be the result of factors other than poor school systems. Behaviors of students may very well help reveal information critical to improving student performance.

#### Rationale and Significance of the Problem

Overlooking possible factors that influence student performance makes the development of solutions less effective. By focusing all attention and effort toward the educational system, intervening factors which significantly relate to student performance in schools are left to hinder school improvement efforts. Possible intervening factors identified by the author and/or other researchers include:

1. The behaviors of the students.
  - a. Amount of sleep
  - b. Having a job (McNeil, 1984, p. 28)
  - c. Owning a car
  - d. Attendance
  - e. Athletic participation
  - f. Club and/or organization membership (Harvancik & Golsan, 1986, p. 4; Leonardson, 1986, p. 474; Soltz, 1986, p. 23)
  - g. Time spent on homework (Eddy, 1984, p. 3; Foyle & Bailey 1985, p. 7)
  - h. Reading (Ward, 1983, p. 46)
  - i. Television viewing habits (Ward, 1983, p. 35)

- j. Eating habits
  - k. Health (Leonardson, 1986, p. 474)
  - l. Discipline (Boyer, 1984, p. 528; Myers, Milne, Baker, Ginsburg, 1987, p. 30)
2. Society's influence on achievement.
    - a. Peer pressure
    - b. Availability of jobs
    - c. College requirements
    - d. Mobility with cars
    - e. Passive entertainment rather than active participatory entertainment
  3. Parents' influence.
    - a. Parents' interest and involvement in school (Bell, 1984, p. 533)
    - b. Aspirations for students
    - c. Time spent with students
    - d. Role model
    - e. Instructional help
    - f. Discipline
    - g. Values
    - h. One or two parent home (Myers et al., 1987, p. 30) (Milne et al., 1986, p. 137)
    - i. Mother working (Boyer, 1984, p. 529; Milne et al., 1986, p. 138; Myers, 1987, p. 30)
    - j. Educational level of parents (Burton, 1976, p. 12; Sampson-Malone, 1986, p. 2456)
    - k. Parents' occupation(s)
  4. Differences in testing conditions.
    - a. Motivation
    - b. Open enrollment at junior/community colleges which encourages less talented students to take college qualifying exams
    - c. Value placed on education
  5. Differences in school needs.
    - a. School improvement efforts should be done locally to address local needs. State mandates of one state may not be applicable for another. Ernest Boyer in the Carnegie Report recognized state differences. Iowa is not necessarily typical of the nation; conditions vary from state to state (Boyer, 1983, p. 30).
    - b. Although Iowa has been a leader in education excellence, Iowa legislators utilize national reports as a basis for legislation concerning educational reform.

The assumption that falling student achievement was the result of a failing educational system directed more attention toward schools and less toward the home. Americans have asked schools to take more responsibility, not only for student academic performance, but also for the nurturing of their children.

Schools not only feed students lunch, but have also become more involved in serving breakfast. In the period between 1969 and 1983, discipline was seen as the largest problem facing public schools fourteen of fifteen years (Elam, 1983, p. 30) of the Gallup polls. Schools are expected to maintain and administer high levels of discipline. It is unclear whether parents are compelled to assist schools in disciplining their children, but 72 percent of those polled believe the cause of poor discipline in school was the lack of discipline in the home. (Gallup, 1983, p. 37) President Reagan publicly supported the efforts of schools by recommending schools be allowed more authority to discipline students to maintain an orderly learning environment.

Sex education, although controversial, is seen by Americans as being an important responsibility of schools. When polled, 70 percent favored the teaching of sex education in high schools while 17 percent were opposed. Sex education in elementary schools was not as well received. Forty-five percent supported sex education in elementary schools while 48 percent opposed.

Drug education, like sex education is seen as an important responsibility of schools. State mandates required that drug education be taught in health curricula in the state of Iowa. President and Mrs. Reagan's efforts to raise

public awareness of the need to address the drug abuse/use issue has also been evident.

The teaching of values has also been seen as an important function of schools. The 1981 survey indicated that seventy percent of Americans favored values education in school, with 17 percent percent opposed (Gallup & Clark, p. 39).

With the majority of families having working mothers, child care in schools has also been met with a great deal of interest. Although not a majority, the 1981 Gallup Poll indicated 46 percent in favor of child care in public schools and 47 percent opposed (p. 45).

With more demands placed upon schools, schools have become more responsible for the socialization of their students. Schools have been called on to do more instruction once done at home. Discipline, values, sex education, meal preparation and child care have now become part of the schools' agenda.

With national reports claiming that falling student achievement was the result of failing school systems, parents may feel less obligated to share responsibility for their child's performance. With parents critical of schools, the attitude has not been conducive for cooperation between parents and schools to improve student academic performance.

### Statement of the Problem

"Obviously, the problem of low achievement cannot be resolved by the educational system alone. Individual student behaviors, school factors and attitudes of students' families have been found to be related to achievement" (Sampson-Malone, 1986, p. 2456). A working partnership of parents and school to encourage better student achievement is desirable. Schools and parents must accept responsibility for their role in the quest to improve student achievement.

Not all characteristics of the students' and their families which influence student performance can be changed or manipulated. The number of parents living at home, father's occupation, family income, race, sex, employment status of the mother, educational levels of parents and home ownership are factors which are not reasonably manipulated. Although studies have identified student characteristics as being significantly related to academic performance, they were not of interest in this study. Student behaviors which lend themselves to change were.

Changeable student behaviors which significantly relate to student academic performance was the focus of this study. With cooperation of school and home, behaviors such as attendance, time spent on homework, television viewing habits, reading, participation in school co-curricular programs, discipline, and working during the school year, could be changed if relationships were found to be significant. If significant relationships between

changeable student behaviors and student academic performance exist, changing those factors could prove to be conducive to the improvement of student academic achievement.

Understanding the of factors which relate significantly to student academic achievement would be useful to educators. This study investigated student behaviors to discover significant relationships between behaviors and student academic performance. Knowledge of those behaviors could prove to be helpful for teachers, administrators, parents and students wishing to improve academic performance. Organizations, such as Parent-Teachers Associations, could also utilize this information to educate parents of their importance to influence student behavior and encourage cooperation with schools to change those behaviors to cultivate improvements in student academic performance.

### General Hypothesis

This study examined student behaviors identified in the review of literature as significantly related to student academic performance. More specifically, it examined those behaviors which lend themselves to change.

It is hypothesized that student behaviors are significantly related to student academic performance. Seven student behaviors were examined in this study. Seven hypotheses about those behaviors were investigated.

H1. Class percentile rank is negatively related to student choice of nonattendance of school at the .05 level of significance.

- H2. Class percentile rank is negatively related to violations of school rules at the .05 level of significance.
- H3. Class percentile rank is positively related to the level of participation in co-curricular activities at the .05 level of significance.
- H4. Class percentile rank is positively related to the amount time spent on homework and quality of homework done at the .05 level of significance.
- H<sub>0</sub>5. Class percentile rank is not related to the number of hours worked at a job while attending school at the .05 level of significance. (Null hypothesis)
- H6. Class percentile rank is positively related to reading, other than homework at the .05 level of significance.
- H7. Class percentile rank is negatively related to television viewing at the .05 level of significance.

### Definitions

Student academic performance was defined to be the student's class percentile rank. Class ranks were arranged according to cumulative grade point averages from highest to lowest. Individual student academic performance was determined by the student's rank among peers of his/her school. Class percentile ranks (CPR) ranged from one to ninety-nine, with one low and ninety-nine high. {Range of CPR was  $\geq 1$  and  $\leq 99$ } An example of class percentile rank would be five of 150 students. Divide the individual rank by the total number in the class, multiplied by 100 and subtract that figure from 100, this yields a class percentile rank of 96.67.  $\{(100) - [(5/150) (100)] = 96.67\}$

Examples of student behaviors would be low absenteeism, few incidents of disciplinary problems or ten and fewer hours of television viewed per week.

Definitions utilized in this study appear below:



### Behaviors:

Attendance- The total number of days absent from high school when able to attend.

Rules- The total number of times disciplined in high school for infractions of school rules.

Participation- The total number years of participation in any high school co-curricular activities.

Homework- The total number of hours usually spent studying per week each year in high school, multiplied by the respective quality rating of homework each year in high school.

Jobs- The total number of hours usually worked each week per semester in high school.

Reading- The total number of hours usually spent in reading each week per year in high school.

Television- The total number of hours usually spent viewing television each week per year in high school.

### Other Definitions:

High school- The last four years of secondary school, grades nine through twelve.

Academic performance- Class percentile rank.

Class percentile rank-  $\{(100) - [( \text{Individual class rank} / \text{Total number in the graduating class} ) \times (100)]\}$ .

### Summary

Chapter one briefly described the nation's assumption that falling standardized test scores of students was the result of a failing educational system. Schools have been asked to solve the problem of falling test scores without considering intervening factors such as student behaviors, which may

influence student performance.

It was felt that this assumption not only overlooked possible explanations for lower student achievement, but precipitated numerous simple solutions for a complex problem. In addition, parents who possess the ability to influence student academic performance, have concentrated on school effectiveness and not their contribution to their child's performance.

It is hypothesized that student behaviors are significantly related to student academic achievement. The seven behaviors examined in this study were attendance, rules, participation, homework, jobs, reading, and television.

## CHAPTER 2

### Review of the Literature

#### Introduction to the Review of the Literature

The review of the literature is divided into three sections. The first section examines the role of parents in education. The second section briefly identifies student behaviors utilized in other studies. The third section identifies student behaviors which lend themselves to change utilized in this study. Behaviors which lend themselves to change and are significantly related to academic performance were of great interest in this study.

The review of literature reveals a variety of studies which examined personal behaviors of students as they related to student academic performance. However, the results of those studies yielded conflicting results. The review literature would have been of greater value in the development of hypotheses if related studies were in more agreement. The presence of conflicting studies support the need for further research.

#### Review of Relevant Literature

Interest in the educational system in America intensified in the early 1980s with the release of reports critical of school effectiveness and cited failures of schools to produce students who perform well on standardized tests or in international academic competitions. The reform movement reached its peak with the release of the National Commission on Excellence in Education

report, A Nation at Risk. This has made a lasting impact at local, state, and national levels since its publication on April 26, 1983. Other reports on education released the spring and summer of 1983, marked "an unprecedented confluence of evidence and opinion from independent sources about the need to improve American education" (National Commission on Excellence, 1984, p.1).

### Parental Involvement

What is the appropriate role of the parent in their child's educational program? Studies identified the family as being an important factor in the academic performance of students (Sampson-Malone, 1986; Bell, 1984; Boyer, 1984; Milne et al., 1986; Allen, 1986; Rutter, 1984; McGrath, 1983; Myers, 1987), but the parents' role in changing those factors to improve student academic performance had not been well defined.

With the notable exception of Ernest Boyer's book, High School (1983), the evaluation of education in America was based on student performance on standardized test scores. High School, often referred to as the "Carnegie Report," criticized A Nation at Risk for not looking at the students in the schools. "And yet schools are made up of young people: they must reflect the attitudes of those who walk the corridors and meet in classrooms everyday" (Boyer, 1984, p. 529).

Reports on education which concentrated on schools without examining the students in them, presented an incomplete picture of education in America

and may have actually contributed to its deterioration. Parents, who play an important role in their children's education, have been given reason to relinquish responsibility for poor academic performance of their children. "Obviously, the problem of low achievement cannot be resolved by the educational system alone. Individual student behaviors, school factors and attitudes of student's families have been found to be related to achievement" (Sampson-Malone, 1986, p. 2456). "In High School, we urge (inadequately, I fear) more home support for schools" (Boyer, 1984). "At home, parents should reinforce the lessons their children learn in school" (Bell, 1984, p. 533).

Parents are encouraged to be more active in their child's education, but for different reasons. President Reagan recommended legislation for vouchers to enable parents to become involved in their child's education. The president believed that vouchers would allow parents to communicate to teachers and principals to shape up their schools or they will transfer their children (Bell, 1984, p. 533). However, this form of communication would be indirect and would continue to place the blame of poor student performance solely on schools.

Educators have consistently identified the need for parental support for schools. For students to perform better in school, "parents should reinforce the lessons their children learn in school" (Bell, 1984, p. 533), have "more home support for schools" (Boyer, 1984, p. 529), and "ensure that required work is completed" (Keith, 1982, p. 252). Cooperation with school efforts and positive attitudes of students' families have been found to be related to achievement.

Examination of Asian student achievement in American schools reveal a nurturing of a strong obligation to parents. According to McGrath (1983), "scholastic achievement is the only way of repaying the infinite debt to parents" (p. 52). It appears that parents' attitudes toward school and student achievement is an important component of academic performance.

Student behaviors which relate to academic performance was identified in the literature, but agreement on the significance of those behaviors was not always evident. What follows is a brief review of factors relating to student academic performance as reported by studies on education.

### Student Characteristics and Academic Achievement

Numerous studies have been conducted that examined student behaviors as they related to student academic performance. Many of these studies examined behaviors which were not easily manipulated. Student behaviors which are difficult to change may be of interest to educators, but do little in the quest to improve student academic performance, other than possibly gain a greater understanding of students. What follows is a brief summary of research and reports found in the literature.

Former Secretary of Education Terrel Bell indicated that parent needed to be more involved in their child's education. "At home, parents should reinforce the lessons their children learn in school. If a longer school day is not appropriate for every school, extra study at home is entirely appropriate for every student" (1984, p. 533). Bell identified President Reagan's commitment to

vouchers as an example of parent involvement. "We believe that both choice and access are desirable. Giving parents the power to select their children's schools will lead to greater parental involvement in education and increased responsiveness on the part of teachers and principals to the needs of low-income and minority families" (p. 533). Although parent involvement in education is desirable, it was considered difficult to measure, therefore not utilized in this study.

Ernest Boyer identified the problems of schools as being a youth problem, not just a school problem. "(S)chools are made up of young people: they must reflect the attitudes of those who walk the corridors and meet in classrooms every day" (1984, p. 529). The influence of the home was considered an important factor in the academic performance of the nation's students. Negative influences included student feelings of being unwanted and unneeded, shifts in American work patterns and family life, one-parent homes, and working mothers. "This shift in family life has caused schools to assume burdens and responsibilities of the home" (p. 529). Boyer identified more home support for schools as a necessary component to school improvement.

Burton identified student background as being an effective predictor of academic performance in college. Although not all the variables in the Burton study were student behaviors, his list factors included "sex, race, high school grades, SAT score, father's education, size of home town and the number of colleges attended, in addition to the perception of family emphasis on discipline, independence, materialism, community activities, and social

activities" (1976, p. 12). Burton identified variables indirectly related to those utilized in this study. However, those findings support the home's influence on academic performance.

A Nation at Risk examined the American educational system and made recommendations for improvements. Those recommendations included more homework, longer school days, longer school years, and teaching the new basics (National Commission on Excellence, 1984, p. 75). These recommendations were directed toward schools and neglected student and parent responsibility for academic performance.

Eddy examined the relationship between homework and academic achievement in the literature and considered the evidence to be inconclusive. "Nevertheless, reviews of students', teachers', and parents' perceptions reveal that all believe homework helps students achieve better grades" (1984, p. 2). This perception and recommendations from educational reports, have prompted schools to develop policies which address homework. "(W)hat can be said is that individualized homework assigned to appropriate grade levels seems to help students develop the discipline study habits that result in increased scholastic achievement" (p. 3).

Foyle and Bailey examined the effects of different types of homework on student achievement based on gender (1985, p. 7). Homework was divided into two groups, preparation homework and practice homework. The study indicated that "homework does make a difference in student achievement. Student achievement is produced by either preparation homework or practice



homework" (p. 8). The study also found no gender differences. "Females and males achieve the same regardless of the type of homework assigned to them" (p. 7).

Keith indicated that homework was important for student success as measured in high school grades. The study also identified parents as being an important influence on what homework was done. "The analysis confirms that an increase in time spent on homework has a positive effect on a student's grades in high school.....Parents and students can ensure that the required work is completed. Homework is clearly important and should be treated as such." (1982, pp. 250, 252)

McNeil studied the impact of student employment on classroom knowledge. McNeil found that teachers widely held the belief that jobs negatively affected student performance on school. However, students were not given a great deal of homework which could not be done in school and required much time spent on homework outside of the school day. "The differences among the working and nonworking students in time spent on school work outside of school confirm this pattern" (1984, p. 25). Conflicting results of studies by Eddy, Foyle and Bailey, Keith, and McNeil support the need for further study of the effect of homework on academic performance.

McGrath examined the apparent effects of cultural conditioning on scholastic achievement. The issue of whether academic achievement is the result of environment or heredity was also considered. It was reported that Asian-American children in American schools tended to perform better

academically than their American peers. "Most educators believe that Asian scholastic achievement has more to do with nurture than nature" (1983, p. 52). It appears that "most Asians regard education as the best avenue to recognition and success" (p. 52). The author indicated that sociologist, William Liu of the University of Illinois' Chicago campus, stressed "cultural conditioning" as an important factor to Asian student academic success. "(S)cholastic achievement is the only way of repaying the infinite debt to parents, of showing filial piety" (p. 52). Although student motivation was not examined in this study, it is assumed that highly motivated students spend more time doing homework. Homework was one of the seven variables utilized in this study.

Harvancik and Golsan examined the relationship between extracurricular activities and academic performance in the literature and considered the evidence to be inconclusive. "Based solely on ACT scores, one would have to conclude that there is an extremely weak relationship between academic success and participation in extracurricular activities. Whether this is a function of ambiguously worded questions or a function of characteristics of the sample has not been determined" (1986, p. 10).

Soltz studied the effect of athletic participation on grade point average. Comparisons were made between athletes versus non-athletes and athletes in-season versus athletes off-season. "These data argue strongly that student athletes' grades do not suffer as a result of participation in sports. To the contrary, athletes' GPA are significantly higher than nonparticipating students'. In addition, significantly fewer athletes receive a failing grade during

competition than when they are not actively competing" (1986, p. 23).

Participation in co-curricular activities in high school was selected for this study.

Myers et al., (1987) examined the effects of student discipline and high school performance. He also identified family situation, such as single-parent families and working mothers, as playing an important role in determining student misbehavior. "The strong impact of grades on misbehavior and the generally insignificant effect of achievement test scores suggest that it is not failure to learn that results in misbehavior; rather, failure must be perceived. Perception of low performance relative to classmates leads to misbehavior" (p. 30). The relationship between academic performance and discipline was selected for this study.

Rutter's study agreed with Myers. Rutter et al. examined schools, rather than students to identify school characteristics with high exam scores. "On the whole, schools which have high levels of attendance and good behaviour tend also to have high levels of exam scores" (1979, p. 92). In another publication, Rutter disagreed with claims that affluent upbringing, esteem in music and sports had any effect on academic achievement. "An affluent upbringing may be very nice for you but there is no evidence that in itself it makes very much difference....There is absolutely no reason school positions of esteem in music and sport and so on should be linked to academic achievement" (1984, pp. 64, 65). Attendance, rules and participation in co-curricular activities were selected for this study.

Uguroglu and Walberg identified the home environment as a significant predictor for science and reading achievement. However, Uguroglu and Walberg warn, "while home environment emerges as the most important factor in predicting achievement for reading and science, this finding cannot be used as an excuse by educators to abdicate their quality of instruction responsibilities" (1986, p. 8).

In contrast to the Uguroglu and Walberg study, the Texas Education Agency of Austin supported the critics of the American school system who blame schools for declining test scores. "The educability of students derives far more from the nature of the school to which they are sent than it derives from the nature of the families from which they come. Although studies done in the 1960's linked low achievement to environmental factors, more recent studies of school effectiveness demonstrate the power of the school to control learning" (1987, p. 6).

Ward examined the effects of television watching, leisure time reading and homework on academic achievement of students ages thirteen through seventeen. For 17-year-olds, television watching, homework and reading comprehension appeared to be directly related. "Among 17-year-olds, the highest reading performance was found for those doing the most homework and watching the least television" (1983, p. 43). "Highest reading performance for 17-year-olds occurred among those who read for one to two hours a day and watched less than an hour of television. Lowest performance occurred for those who watched over four hours of television a day, although even among

this group those who read one to two hours held an advantage" (p. 39).

Student behaviors that influence academic performance which lend themselves to change, should be of great interest to schools and parents. With a cooperative effort of schools and parents, it would be possible to cultivate an environment at school and home conducive to higher academic achievement. This study was most interested in determining factors which significantly relate to student performance. The following factors were utilized in this study.

### Homework

Homework is typically America's answer to improving academic performance. The American work ethic reinforces the belief that improvements can be realized by hard work. In school, this belief is usually related to more diligent study, usually in the form of homework. A Nation at Risk recommended a longer school day, academic year, and more homework (p.75). Former Secretary of Education Terrel H. Bell reiterated this recommendation in Phi Delta Kappan one year later. "If a longer school day is not appropriate for every school, extra study at home is entirely appropriate for every student" (Bell, 1984, p. 533).

Foyle and Bailey (1985) indicated that homework does make a difference in student achievement. "Student achievement is produced by either preparation homework or practice homework....There was a statistically significant difference (.05) in achievement mean scores between students who were assigned homework and students who were not assigned homework.

Homework which is regularly assigned, clearly stated, regularly collected, promptly graded, and promptly returned increases student achievement when compared to students who were not assigned homework." (pp.7, 8)

"One to two hours of homework a day were associated with the highest levels of reading performance for 13-year-olds. For 17-year-olds, reading performance increased as the amount of time spent on homework increased. More than two hours a night on homework showed the highest performance levels" (Ward, 1983, p. 45).

### Television

Television viewing habits have been considered an important factor in student performance. Time spent watching television may interfere with time spent reading or doing homework. Ward (1983) found a direct relationship between reading comprehension and amounts of television and homework. For "those (students) doing the most homework and watching the least television displayed the highest reading performance levels" (p. 46). Given that homework is seen as being significantly related to student achievement, activities which interfere with homework would be detrimental to student achievement.

"By age 17, it was almost universally true that highest levels of reading comprehension were associated with under an hour of television watching a day. Achievement levels for most 17-year-olds became lower as television viewing increased" (Ward, 1983, p. 35). Uguroglu and Walberg (1986, p. 8)

also found significant negative correlations between television viewing and achievement.

### Attendance

Schools which have high levels of attendance "tend also to have high levels of exam scores" (Rutter, 1979, p. 92). Rutter found attendance as being significantly related to all ability levels when compared to test scores.

Although a logical assumption may be that good attendance affords the student the opportunity to take advantage of classroom instruction, student interaction, and classroom participation, it may also be a reflection of other factors. Participation in extracurricular activities relates to better school attendance (Harvancik & Golsan, 1986, p. 4). Other factors may also include physical fitness, health, satisfaction with school, family attitudes toward education, and relationships with peers and teachers. Varying levels of any of these factors may result in differences in attendance. Attendance may be the an indication that other factors were present.

### Reading

Reading, other than homework has been reported as being significantly related to reading comprehension, an important skill for learning in American high schools. Earlier, television viewing habits were considered to compete with spare-time reading. According to the study by Ward (1983), "highest reading performance for 17-year-olds occurred among those who read

for one to two hours a day and watched less than an hour of television. Lowest performance occurred for those who watched over four hours of television a day, although even among this group those who read one to two hours held an advantage" (p.39). It would appear, spare-time reading, regardless of television viewing habits, produces increased levels of reading comprehension.

"As role models, parents who read may cultivate reading in their offsprings" (Sampson-Malone, 1986, p. 2456). Habits viewed by children may be imitated at a young age and reinforced during adolescence. Parents who tell children not to do something while exhibiting that undesirable behavior, communicate a conflicting message. "This is compounded by the fact that not only do few teenagers read in their spare time, but many do not appear to be spending time on homework either" (Ward 1983, p. 43). It would appear that this is an area where much can be done to increase the time currently spent by most students on spare-time reading and homework.

### Extracurricular Activities

Conflicting studies exist concerning the relationship between student participation in extracurricular activities and academic performance. Studies by Soltz (1986), Harvancik & Golsan (1986), and Leonardson (1986) indicated that grade point averages of students who participate in extracurricular activities were significantly higher than nonparticipating students. Rutter (1984) and portions of Harvancik and Golsan's study (1986) indicated little support for



participation in extracurricular activities as a positive factor for higher academic performance.

A partial explanation for conflicting reports may be the definitions utilized for extracurricular activities. Some considered athletics to be synonymous with extracurricular activities whereas other researchers included clubs, organizations, music, speech, drama, debate, church activities and community activities. Another problem was the definition of student achievement.

Harvancik and Golsan (1986, pp. 4, 10) measured student achievement by grade point averages (GPA) in one portion of his study and college entrance exam scores in another, resulting in significance for GPA and an extremely weak, insignificant relationship for college entrance exam scores.

Soltz (1986, p. 23) made comparisons of athlete academic achievement during the season and off-season. This study defined academic performance by student grades and extracurricular activities as athletics. Soltz's findings indicated that athletes in active competition performed better than athletes not actively competing.

More standardized definitions of both extracurricular activities and student achievement would assist study comparisons. An acceptable study procedure would also assist study replication and comparisons.

### Jobs

Similar to television viewing habits, jobs were often considered to compete with homework time. "Teachers have also indicated that jobs conflict

with school....Although the attitude exists, on-working students did not appear to do more school work than working students." (McNeil, 1984, p.25) There may be a valid argument to the contrary. Working students need to budget and organize their time wisely to accomplish requirements of both school and work.

### Discipline

Generally, discipline has long been a major concern of Americans. Since the first Gallup Poll of the public's attitudes toward the public schools, discipline has been in the top three of every poll. The 1987 poll placed discipline as the second largest problem facing public schools, second only to drug use (Gallup & Clark, p.28). Shortly after the release of A Nation at Risk, "President Reagan declared that we do not need more money; we need more discipline in public schools" (Boyer 1984, p. 528).

"Discipline not only disrupts the educational process, but also an indication of poor academic achievement" (Burton 1976, p. 12). "It may also indicate a perception (on the part of the student), of low performance relative to classmates" (Myers et al., 1987, p. 30).

### Summary

The study of student behaviors which lend themselves to change was of great interest in this study. Significant relationships of changeable behaviors and student academic performance should be of great interest to schools and parents as well. The creation of an environment conducive to higher academic

performance by schools and parents could enhance the educational effectiveness of schools. This information would be conducive to greater cooperation between schools and parents, with parents more involved with the educational process.

Numerous studies have been conducted which examined student behaviors and their relationship to academic performance. The largest number of changeable variables utilized in a single study identified in the review of literature was three student behaviors (Ward, 1983). This study examined the relationship between seven student behaviors and academic performance. The lack of studies in the literature of this nature further justified the need for this study.

## CHAPTER 3

### Design of the Study

#### Introduction

Chapter 3 describes the plan utilized in the study of student behaviors and academic performance. The chapter describes the sample, instrument, procedures, data collection, research design, hypotheses, treatment of data, limitations and summary. The description of the study procedures make evident how questions associated with the study hypotheses were answered.

#### Sample

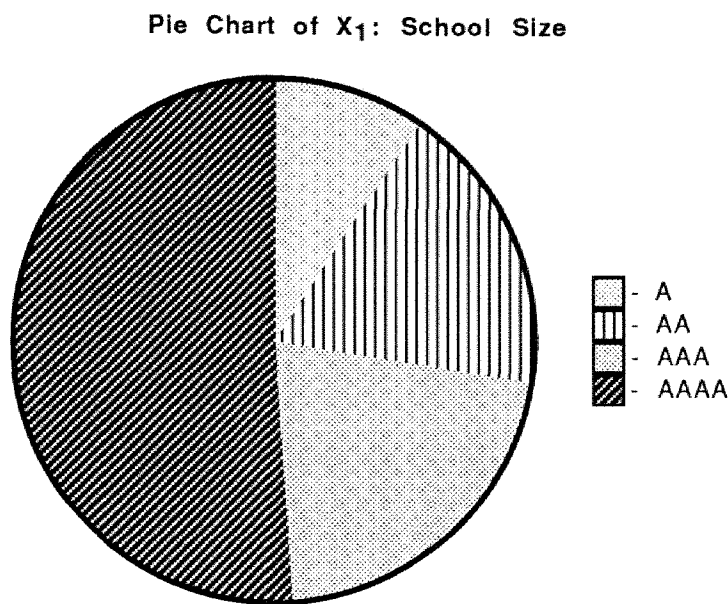
The sample included 282 seniors in high schools located in North Central Iowa. Four schools varying in size participated in the study. Selected schools represented four size classifications utilized by the Iowa High School Athletic Association. The smallest school was a class 1A school with the largest school classified in class 4A. Although school size was not utilized as an independent variable in this study, the decision to include schools from different school size categories was made in an attempt to develop a representative sample. A visual representation of the four schools selected for this study is offered in figure one entitled, "Sampling Pie Chart."

The subjects of this study were senior high school students from each of the four schools included in this sample. All seniors from each high school were eligible to participate on a volunteer basis. Seniors not wishing to

participate were given the opportunity to decline to answer any portion or entire survey instrument.

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Figure 1  
Sampling Pie Chart



Age and gender of the subjects were not utilized as variables in this study. The study utilized behaviors which the current literature identified as relating to performance in high school of students about to graduate. All seniors from the four high schools were given the survey with the option not to participate, therefore information concerning the selection of the subjects within the school was not addressed.

### Instrumentation

A survey was utilized to gather data concerning seven student behaviors described in the review of literature. The behaviors categories included attendance, television, homework, reading, job, extracurricular participation, and rules. A copy of the survey utilized in this study appears in Appendix A entitled, "Student Behavior Survey." The survey instrument was designed specifically for this study. It did not intentionally resemble other instruments utilized in studies described in the review of literature.

The instrument was divided into seven sections, one for each variable studied. Students were asked to indicate to what extent they chose to exhibit respective behaviors throughout their high school years. Questions were designed to break responses down into smaller, more manageable responses to assist respondents to report more accurately.

Attendance, rules, and jobs sections were divided into two parts. Students were asked to respond either yes or no to part "a." Students who answered no in part "a" were asked to go to the next question. Students who answered yes were asked to go to part "b" and indicate the number of times or hours they exhibited the respective behavior for each question. All numbers were totaled in each semester or year to yield a total number of absences, times disciplined for violating school rules, or hours working while in high school.

Extracurricular participation, reading, and television were divided by years of school and categories. Students were asked to indicate the number of

years or hours they chose to exhibit the respective behavior for a specified period of time. Extracurricular participation answers were reported by the number of years of participation in a wide range of activities. Space was also provided for other activities not included in the question. Reading and television answers were reported by the number of hours usually spent per week, each year in high school in, various categories. All numbers were totaled in each category and year to yield a total number of years of participation or hours spent reading or viewing television in high school.

Homework was divided into two parts. Part "a" was constructed similarly to reading and television, with the number of hours usually studied per week reported, each year in high school. Part "b" provided definitions of quality of homework done. Each definition was given a rating of one through five, with one the least productive type of study conditions and five the most productive type of study. Students were asked to rate the quality of study each year in high school. The data were combined by multiplying the number of hours by the rating for each year. The quotients were totaled to yield a number representative of the quantity multiplied by the quality of homework done in high school.

The survey instrument was designed to gather quantitative information. For example, subjects were asked to indicate the number of hours spent reading, working or viewing television. Homework was an exception to this rule. Homework multiplied quantitative measures (number of hours studied) by qualitative ratings (quality of homework done).

Since the instrument was not utilized in other studies, there were no established reliability or validity measures. In an attempt to answer questions related to reliability and validity, the instrument was utilized in a local school district to examine the reliability and validity of the instrument . Ten senior high school students of a high school not included in the study, were given the instrument with conditions reconstructed to match those present when seniors selected for the study completed their surveys. The teacher who administered the instrument was given the same materials and instructions as teachers of the selected high schools. After a period of one week, the instrument was re-administered to the same students, with the exception of one student who was absent at the time of the second test.

Reliability was examined by computing correlations on test-retest measures. Results of the test-retest procedure helped to answer questions relating to the instrument's replication quality. The two sets of tests were correlated in "x" - "y" pairs to determine reliability of each set of questions in each behavior category. Correlations indicated strong relationships with each of the seven sets of questions with correlations ranging from .988 for participation to .881 for television. With the exception of the television category, all categories correlated at the .909 level or higher. Therefore, the results of the correlations indicated that the instrument possessed high levels of reliability in each of the seven behaviors. A visual representation is offered in table one and figure two entitled, "Reliability of Instrument, Correlation of x - y Pairs" and "Reliability of Instrument, Correlation of x - y Pairs Scattergram."



Table 1

## Reliability of Instrument, Correlation of x-y Pairs

X-Y Pairs	Count	Covariance	Correlation	R-squared
Attendance: X <sub>1</sub> -Y <sub>1</sub>	9	14.625	.909	.826
Rules: X <sub>2</sub> -Y <sub>2</sub>	9	32.583	.923	.853
Participation: X <sub>3</sub> -Y <sub>3</sub>	9	156.403	.988	.976
Homework: X <sub>4</sub> -Y <sub>4</sub>	9	3809.944	.955	.913
Jobs: X <sub>5</sub> -Y <sub>5</sub>	9	2385.514	.981	.963
Reading: X <sub>6</sub> -Y <sub>6</sub>	9	92.597	.936	.876
Television: X <sub>7</sub> -Y <sub>7</sub>	9	988.736	.881	.777

Validity of an instrument indicates the extent to which the instrument measures what it was designed to measure. Students who participated in the test-retest process were interviewed to examine validity after the retest. Students were questioned as to their understanding of the questions of the instrument. Although it was determined that the students understood the questions and had little difficulty responding to the questions, it was not possible to determine the validity of the instrument.

Figure 2

Reliability of Instrument, Correlation of x-y Pairs Scattergram

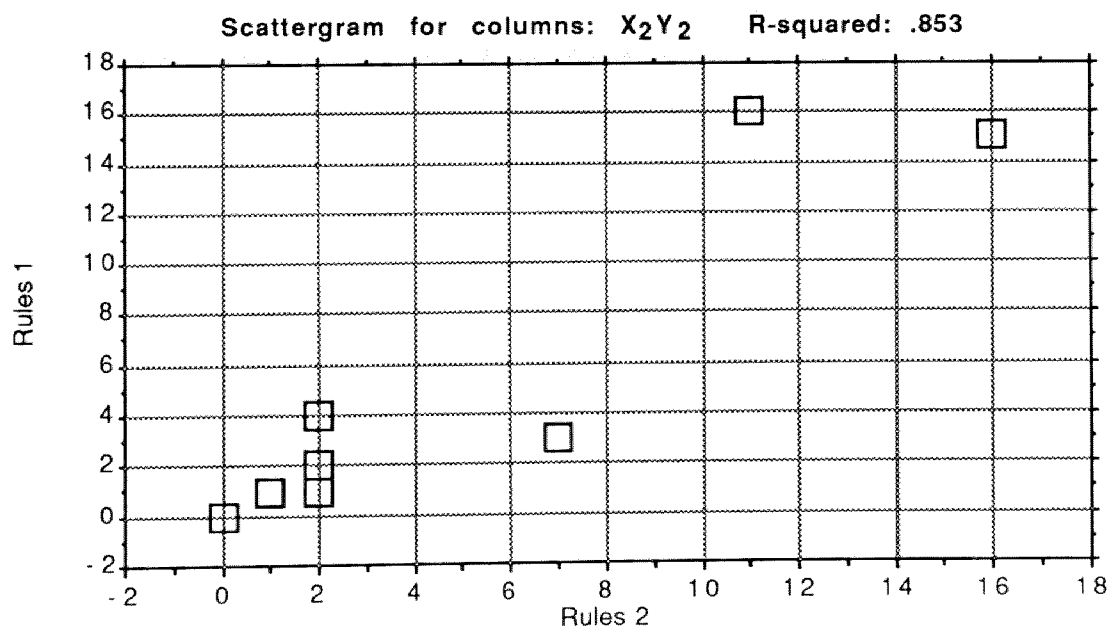
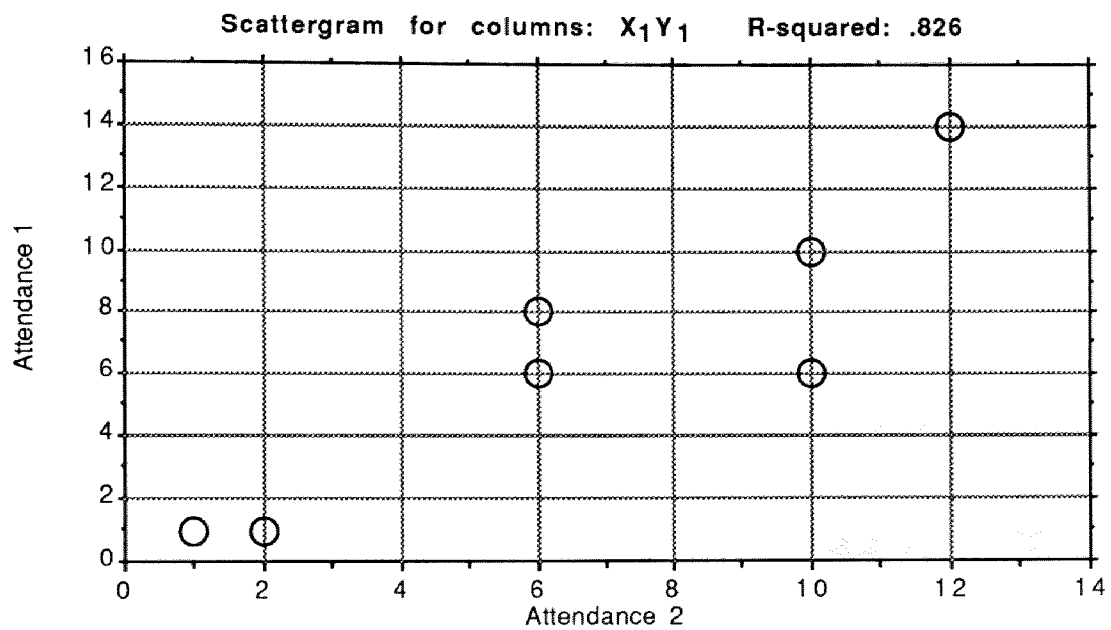


Figure 2, continued

Reliability of Instrument, Correlation of x-y Pairs Scattergram

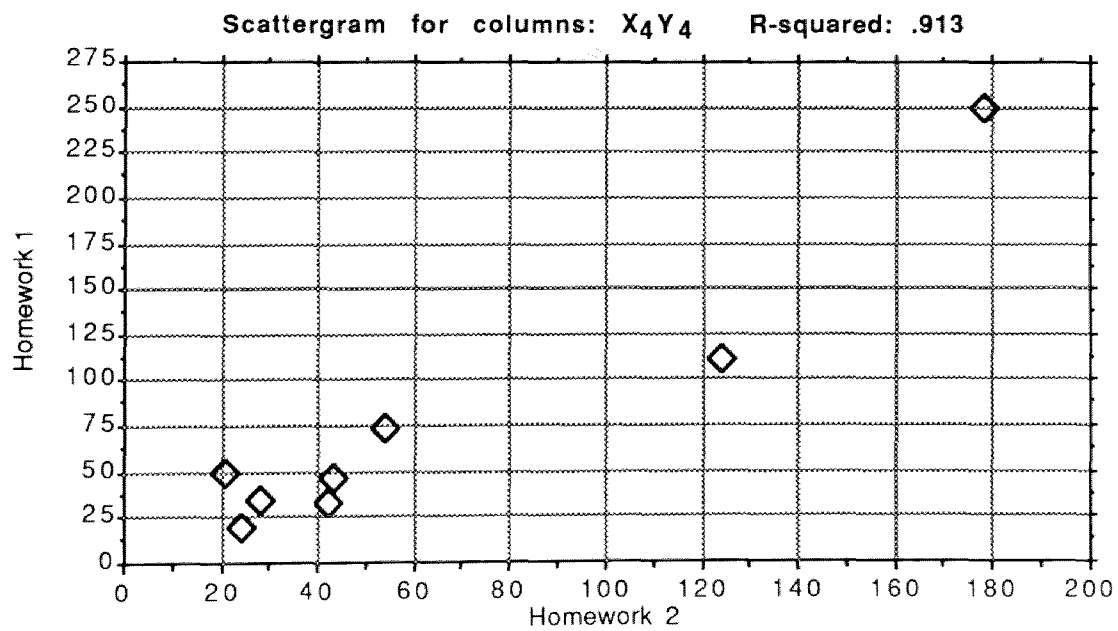
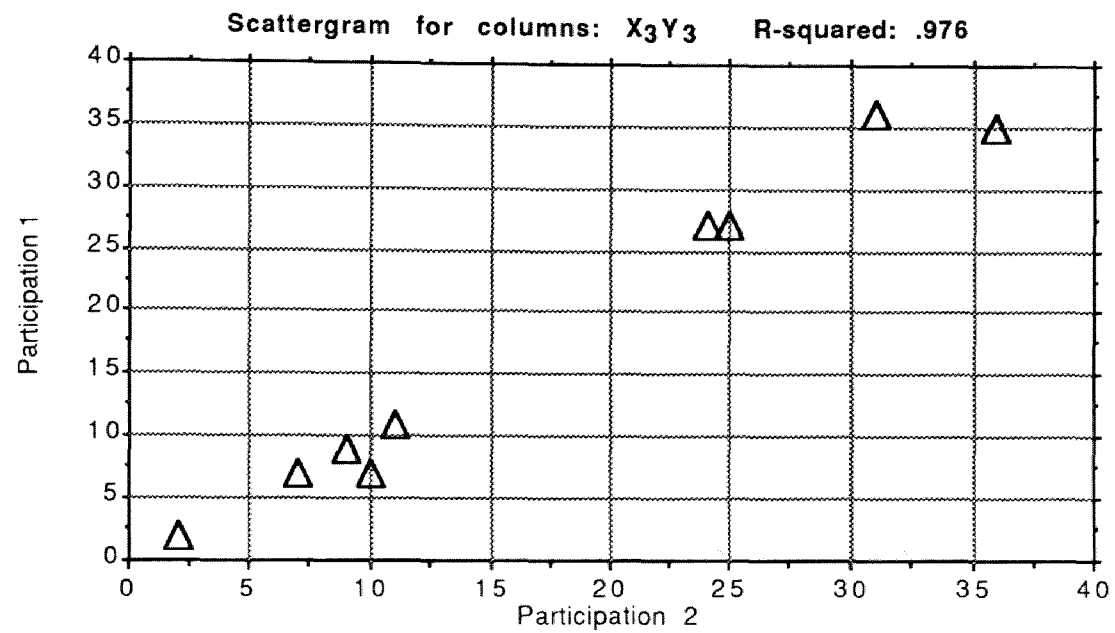


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Reliability of Instrument, Correlation of x-y Pairs Scattergram

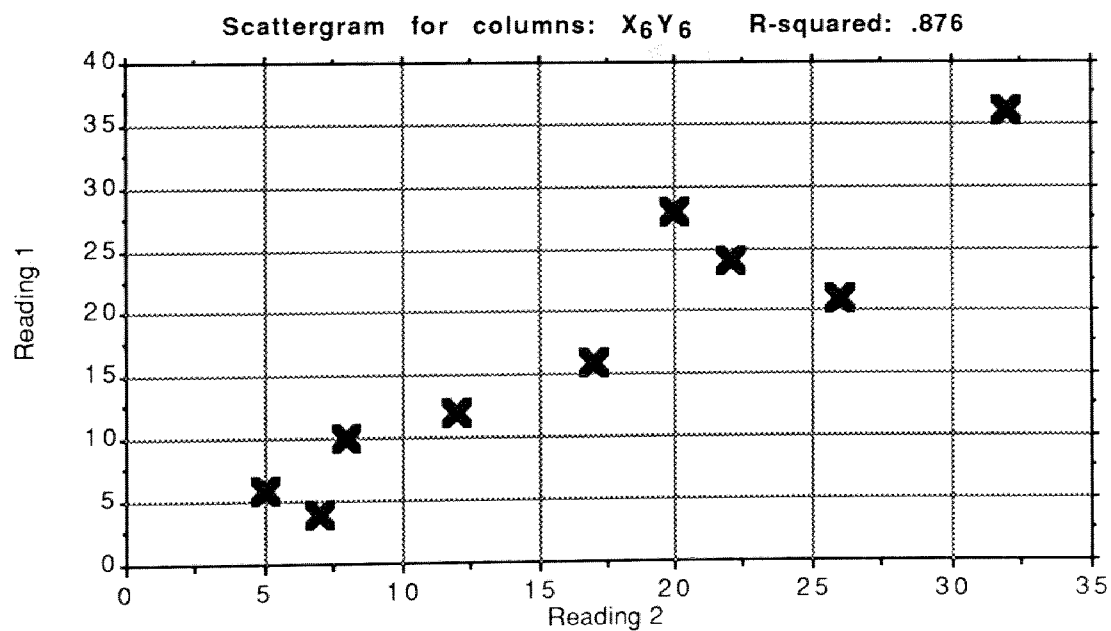
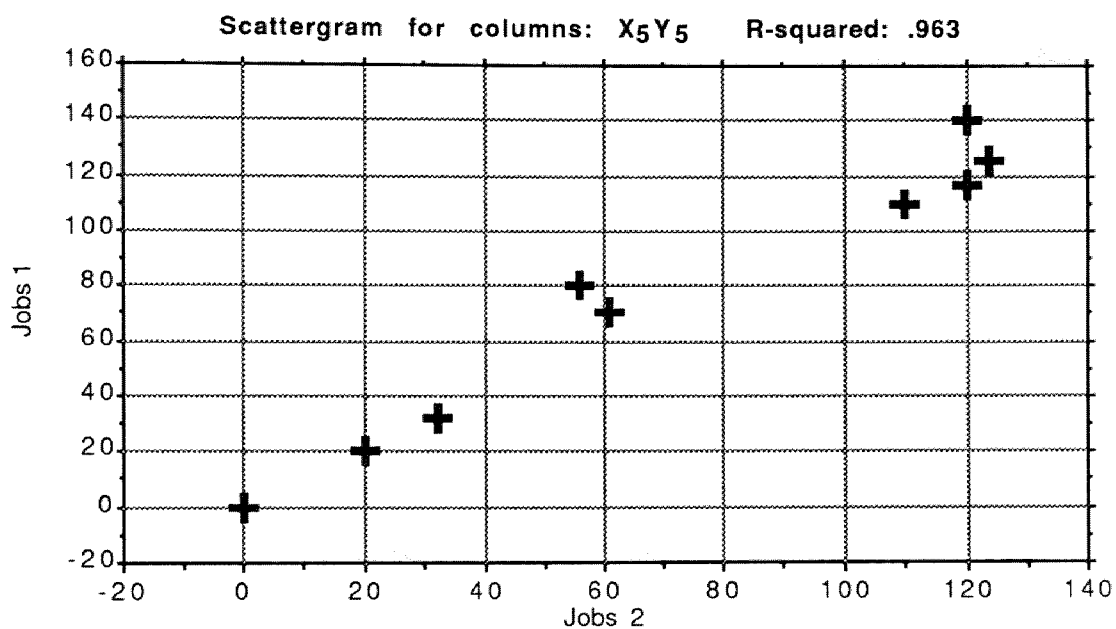
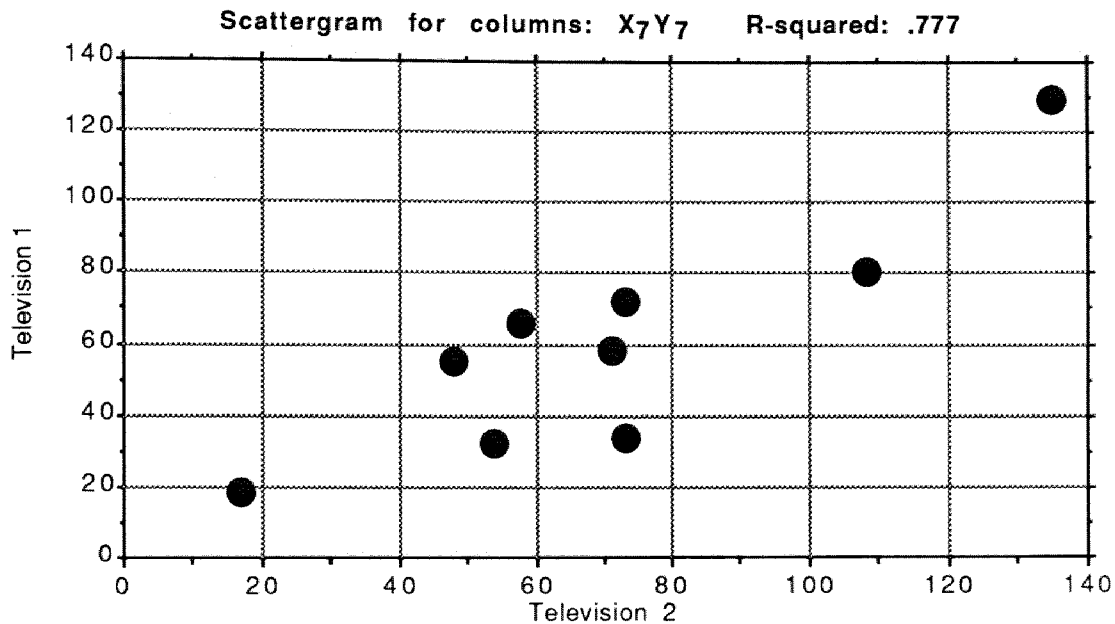


Figure 2, continued

Reliability of Instrument, Correlation of x-y Pairs Scattergram



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Data Collection Procedures

School officials of selected schools were contacted in late April of 1988 to gain their approval to conduct a study of student behaviors in their schools. After gaining administrative approval survey materials were mailed to selected schools in early May of 1988, just weeks prior to graduation. Building principals were provided survey materials and instructions to conduct the survey. The contents of survey packets are listed below.

1. Letter to building principal
2. Survey instruments with name slips attached
3. Consent forms
4. Large envelopes
5. Survey administration instruction sheet with script

Principals were asked to provide class rank information on each survey instrument of each student before survey administration. Student name slips were attached to each survey. This procedure allowed for proper identification of students in respect to class rank information while maintaining anonymity. The slip was removed from the survey before returned. A copy of the principal survey information letter utilized in this study appears in Appendix B entitled, "Letter to Building Principal."

Survey administrators were provided survey instruments, consent forms, survey administration instruction sheet, and large envelopes. The survey administration instruction sheet included a script to be read to students by the test administrator to standardize instructions to all schools of the study. The script included a short explanation of the study, instructions for completing the survey and transposing class rank information from the attached slip of paper to the survey instrument. A copy of the survey administration instruction sheet utilized in this study appears in Appendix C entitled, "Survey Administration Instruction Sheet."

Students were provided consent statements which informed them of the nature of the survey, a brief explanation of how data were to be used, safety precautions designed into the instrument, and provisions for students to choose not to complete any or all of the survey instrument. Procedures to assure anonymity was also explained. A copy of the consent form utilized in this study appears in Appendix D entitled, "Consent Form."

Envelopes were provided for collection of completed survey instruments. One of the students was asked to collect and seal the envelop before returning it to the survey administrator. This procedure was explained to students in advance to survey administration and to further demonstrate precautions to assure student anonymity.

### Research Design

This study utilized an ex-post facto research design. Student behaviors of all students existed before the study, as did student academic achievement. The purpose of this study was to examine all independent variables as they related to the dependent variable, academic performance. Although it was not possible to determine causal relationships, it was possible to determine which independent variables were most significantly related to academic performance. Information from these observations was designed to be helpful to schools and parents in their quest to cultivate environments conducive to higher academic performance.

### Research Hypothesis

The review of literature described student behaviors and their relationship to academic achievement. This study investigated seven behaviors which lend themselves to change as they related to academic performance. Hypotheses tested in this study are provided below.

- H1. Class percentile rank is negatively related to student choice of nonattendance of school at the .05 level of significance.
- H2. Class percentile rank is negatively related to violations of school rules at the .05 level of significance.
- H3. Class percentile rank is positively related to the level of participation in co-curricular activities at the .05 level of significance.
- H4. Class percentile rank is positively related to the amount time spent on homework and quality of homework done at the .05 level of significance.
- H<sub>0</sub>5. Class percentile rank is not related to the number of hours worked at a job while attending school at the .05 level of significance. (Null hypothesis)
- H6. Class percentile rank is positively related to reading, other than homework at the .05 level of significance.
- H7. Class percentile rank is negatively related to television viewing at the .05 level of significance.

It was hypothesized that a number of student behaviors listed above were significantly related to student academic performance. Although studies indicated anticipated direction of correlations, the review of literature did not reveal studies which examined more than three behaviors utilized in any one study. Predictions were made, but were not supported by empirical evidence.

#### Treatment of the Data

To answer questions associated with the hypotheses stated earlier, multiple regression analysis was utilized to examine relationships between behaviors and academic performance. Visual representations of the seven independent variables, as they related to student academic performance, were



presented in scattergrams. General statements of strength and direction of relationships were made as a result of these tests in Chapter 4.

Stepwise regression analysis was conducted to determine ranked strength of relationships between behaviors and academic performance. The most significantly related variable was selected by this treatment first, then the next most significantly related variable and continued until significant relationships were no longer found. The results of the stepwise regression were provided in chapter four.

#### Limitations

Although other methods of answering questions associated with the hypotheses were available, the survey was considered to be the best when judged by ease of application and the type of information produced. Student responses to a survey instrument are perceptions. "Many times it is the perceptions of students which motivates them to act" (Myers et al., 1987, p. 30) rather than reality.

Stepwise regression analysis produced a ranked list of significantly related variables. However, the best of research designs have limitations. Below are limitations associated with this study.

1. Ex-post facto research makes observations and attempts to reveal significant associations. Causal statement based on significant relationships are not appropriate.

2. Multiple regressions are unable to determine pure associations of independent variables on the dependent variable. Independent variables are usually associated with each other, causing a variety of interrelationships.
3. Stepwise regressions may eliminate significant related independent variables if correlated separately due to high associations with other independent variables.
4. Surveys rely heavily on the responses of their subjects. Self reporting is subject to influences which cause undesirable results on the data. These may include, but not be limited to, errors in question interpretation, motivation, and the Hawthorne effect.
5. Selected schools are subject to chance deviations from populations they were designed to represent.

### Summary

The limitations section of this chapter was not designed to discredit the strength of this study. It attempted to place the study's findings in the proper context. It was not possible to state that increased time spent on homework "causes" increased in academic performance. Regardless of how much intuition tempts researchers to make such statements, responsible reporting of findings should describe significant relationships in terms of association.

The study relied a great deal on the cooperation of school administrators and senior students selected to be surveyed. May is a hectic month for both groups, but the timing was designed to examine seniors as they exit the educational system. It was hoped that the information gained from this study would promote cooperative commitments from parents and schools to cultivate improvements in student academic performance by more closely examining its relationship with student behaviors.

## CHAPTER 4

### Analysis of the Data

#### Introduction

Chapter 4 describes the results of the study of student behaviors and academic performance. Data relating to the subjects studied, the analysis of data and how they relate to the independent variable will be presented. The chapter is divided into four additional sections, "Restatement of the Hypotheses", "Description of Data", "Presentation of the Hypotheses" and "Summary". Information presented in this chapter will be factual in nature, with more extensive explanation of the results reserved for chapter five.

#### Restatement of the Hypotheses

It was hypothesized that student behaviors are related to academic performance in high school as measured by class percentile rank. Behaviors selected for this study are those which lend themselves to control by individual students. Seven student behavior categories of interest include; attendance, discipline, participation, homework, job, reading and television. Based on the review of literature, seven hypotheses were tested in this study.

- H1. Class percentile rank is negatively related to student choice of nonattendance of school at the .05 level of significance.
- H2. Class percentile rank is negatively related to violations of school rules at the .05 level of significance.

- H3. Class percentile rank is positively related to the level of participation in co-curricular activities at the .05 level of significance.
- H4. Class percentile rank is positively related to the amount time spent on homework and quality of homework done at the .05 level of significance.
- H<sub>0</sub>5. Class percentile rank is not related to the number of hours worked at a job while attending school at the .05 level of significance. (Null hypothesis)
- H6. Class percentile rank is positively related to reading, other than homework at the .05 level of significance.
- H7. Class percentile rank is negatively related to television viewing at the .05 level of significance.

Statistical analysis of the seven categories and how they relate to the hypothesis are described in the section of this chapter entitled "Presentation of the Hypotheses".

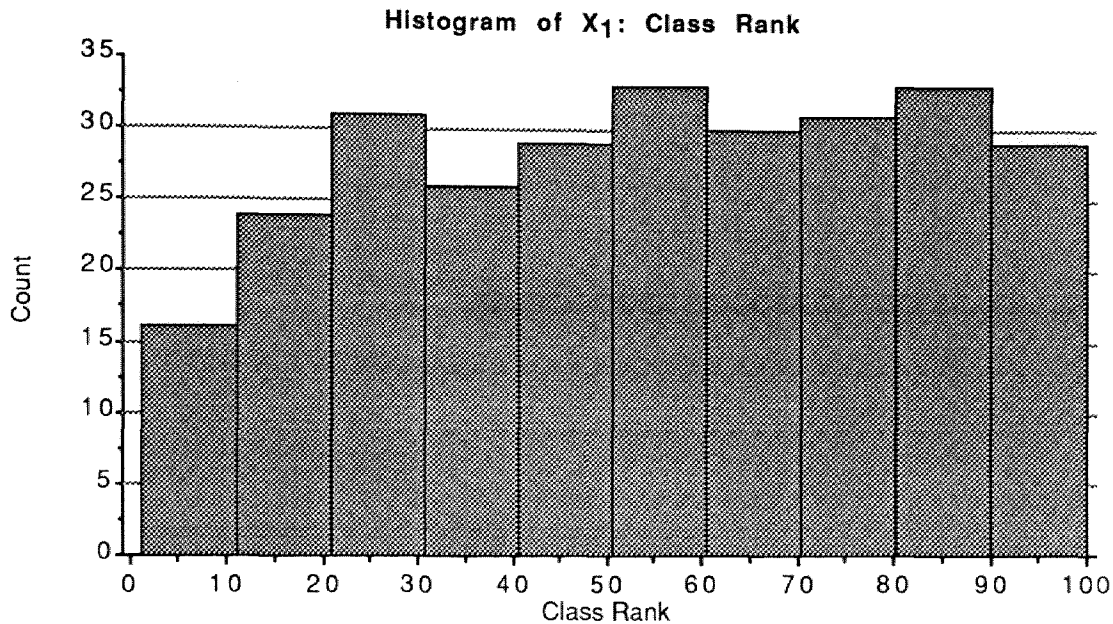
#### Description of Data

Due to the varying size of schools and the need to standardize the criterion variable, class percentile ranks were utilized. A visual representation of student participation in respect to class percentile rank is offered in the figure three entitled, "Class Rank Sampling Histogram."

It is typical of educational research that raw data are skewed. This study is consistent with that phenomenon. Data in all seven categories were skewed to the left. See figure four entitled "Behavior Frequency Distribution Histograms" for a visual representation of the data.

Figure 3

Class Rank Sampling Histogram



In an attempt to limit the effects of outliers and skewed data, the square-root of data was taken before data analysis was conducted. See figure five entitled, "Square Root Behavior Frequency Distribution Histograms". When comparing the frequency distributions of the raw data and transformed data, this arithmetic technique was successful to some degree, in normalizing the histograms of the data. Comparisons of figures four and five of raw data and square-root transformations further illustrate the success of the transformation technique.

Figure 4

# Behavior Frequency Distribution Histograms

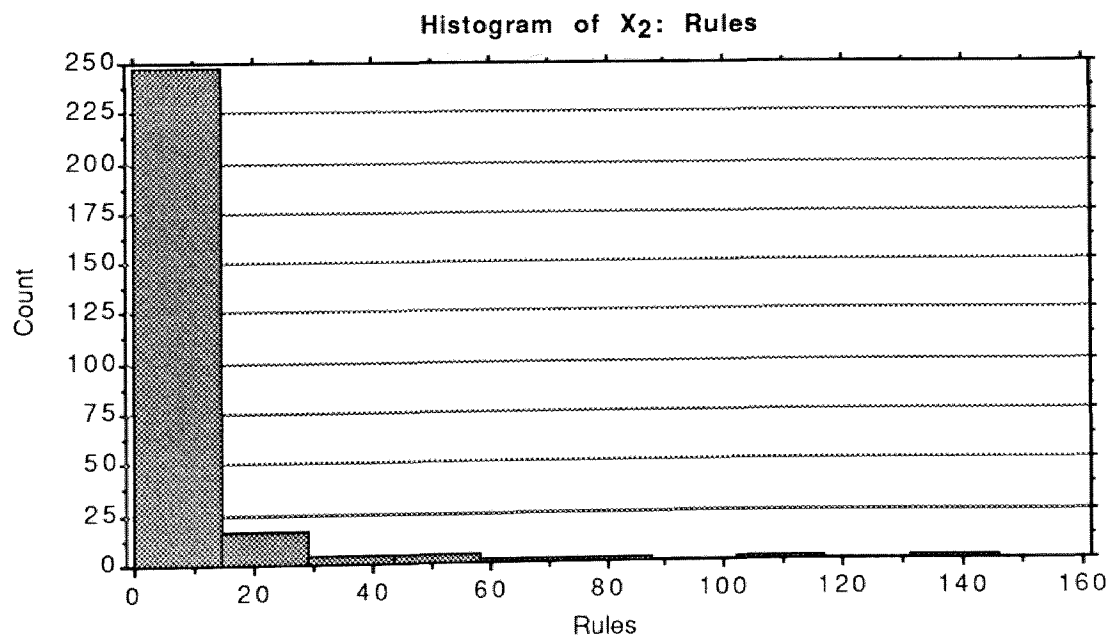
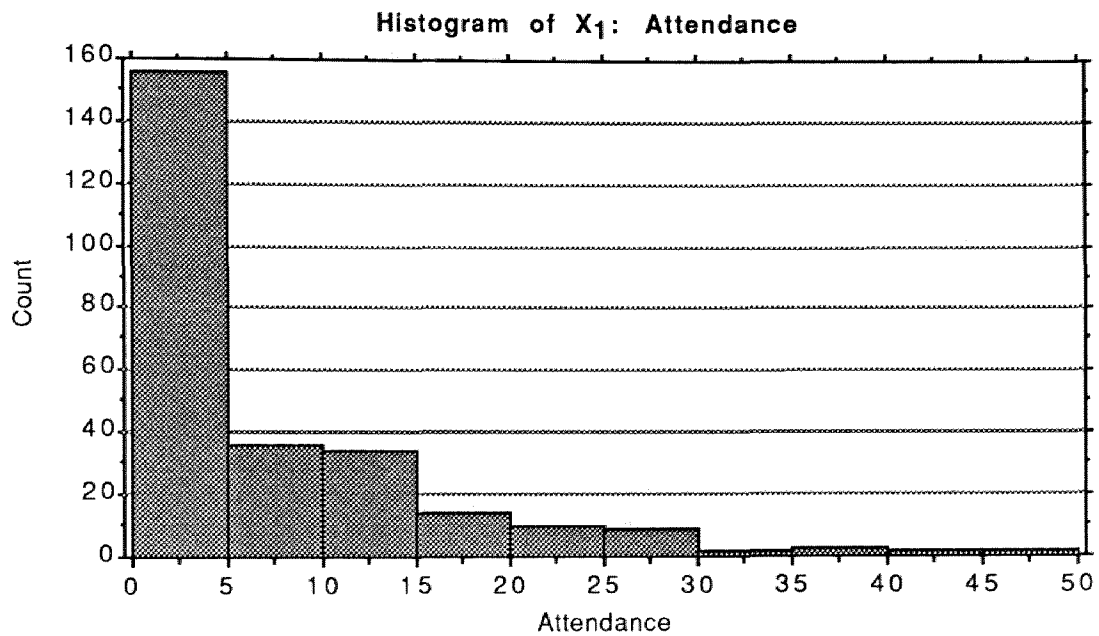


Figure 4, continued

Behavior Frequency Distribution Histograms

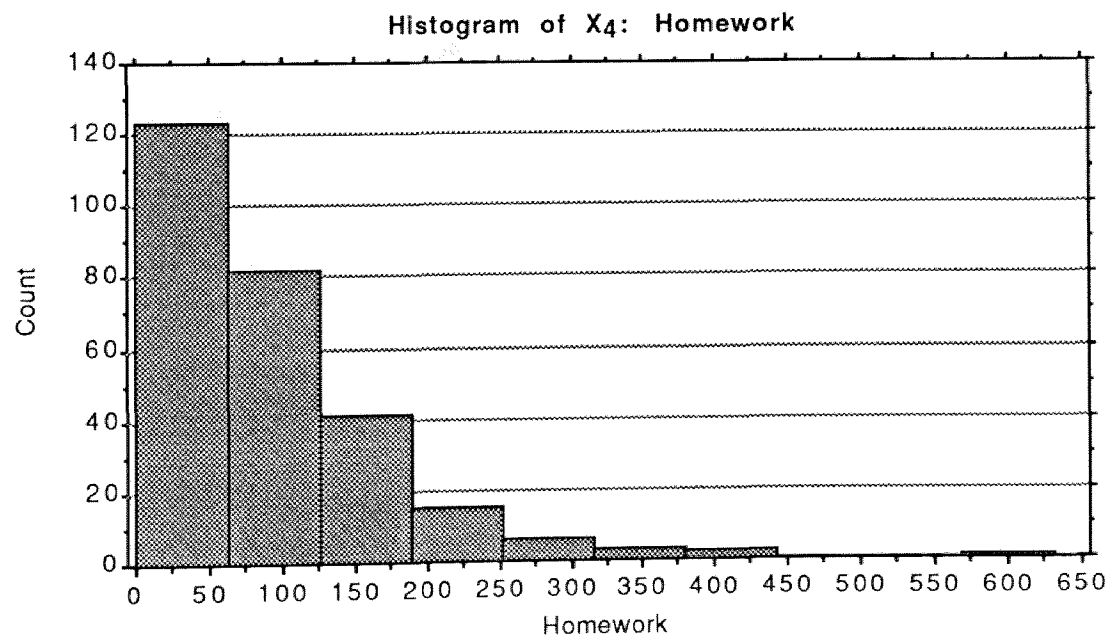
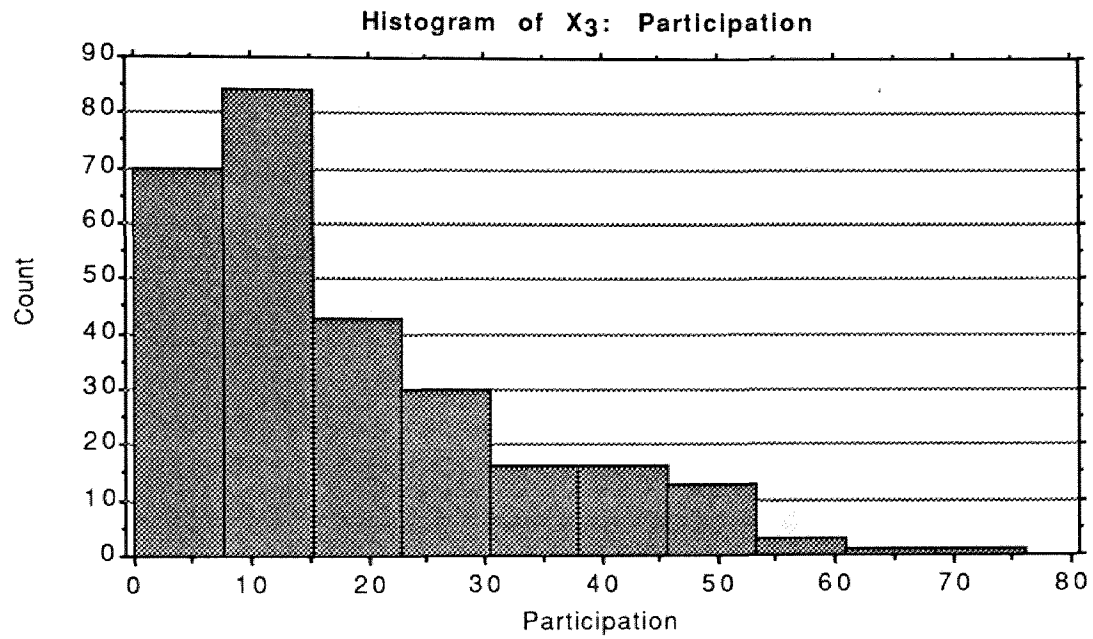


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### Behavior Frequency Distribution Histograms

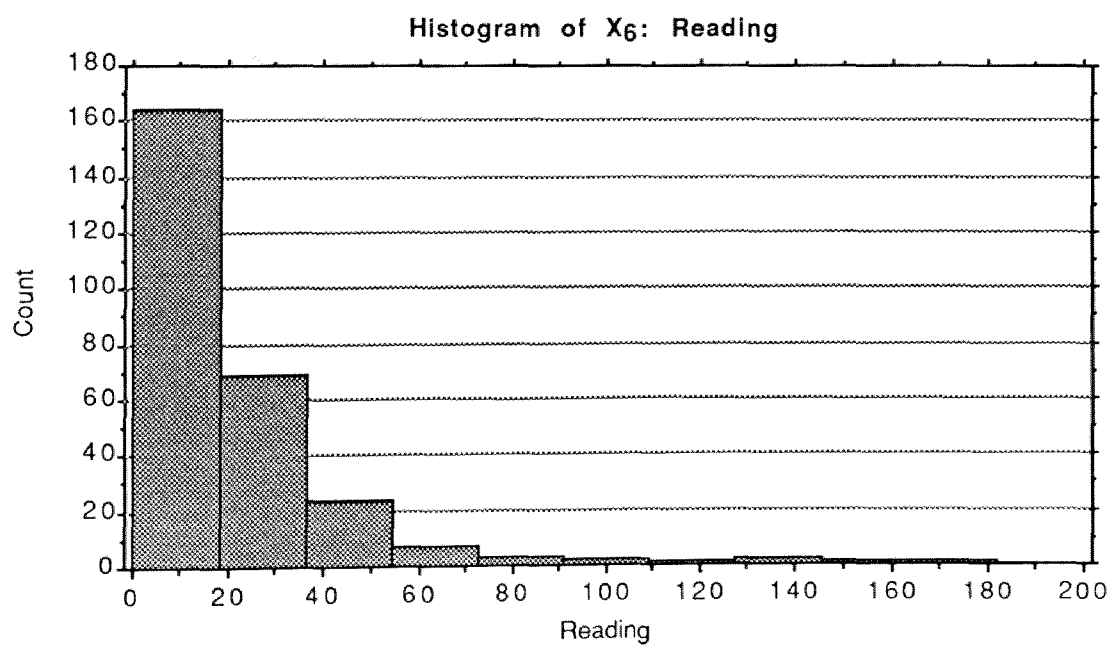
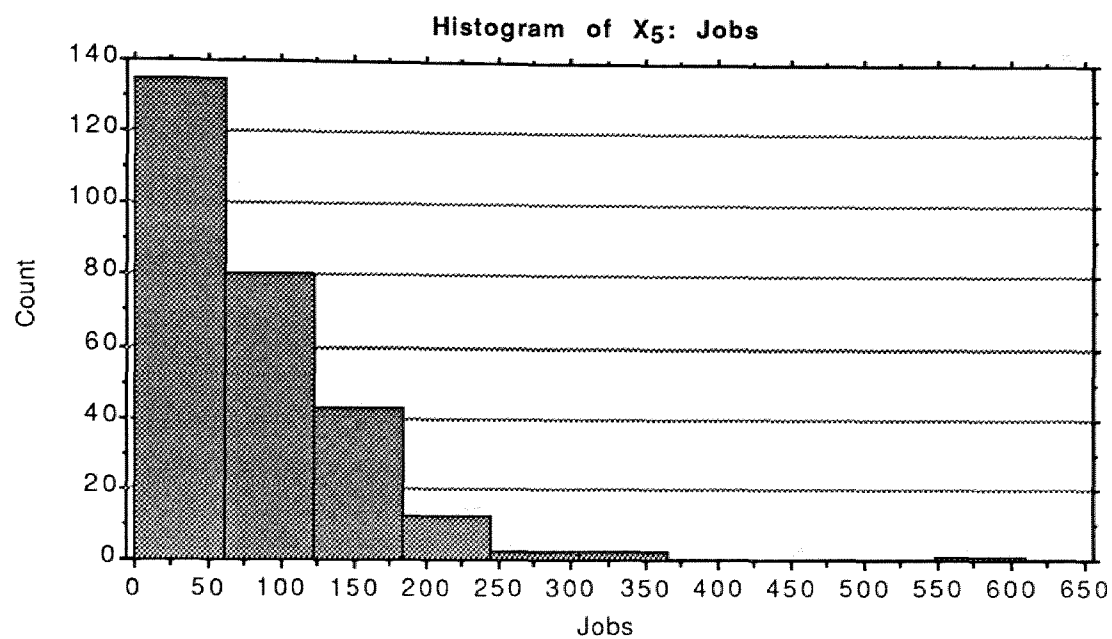




Figure 4, continued

Behavior Frequency Distribution Histograms

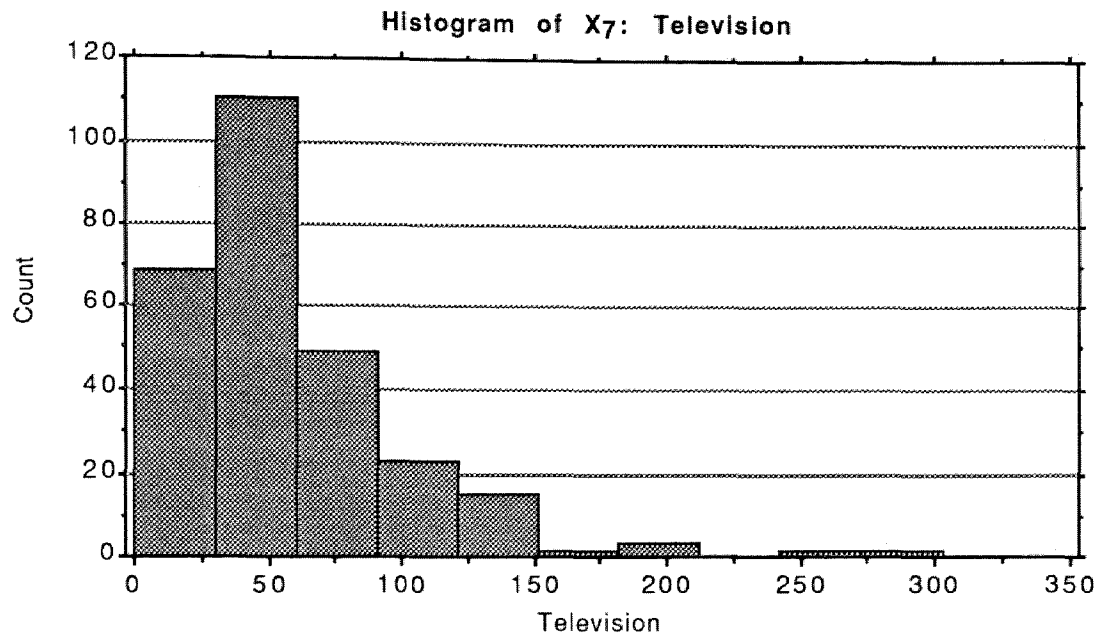


Figure 5

Square Root Behavior Frequency Distribution Histograms

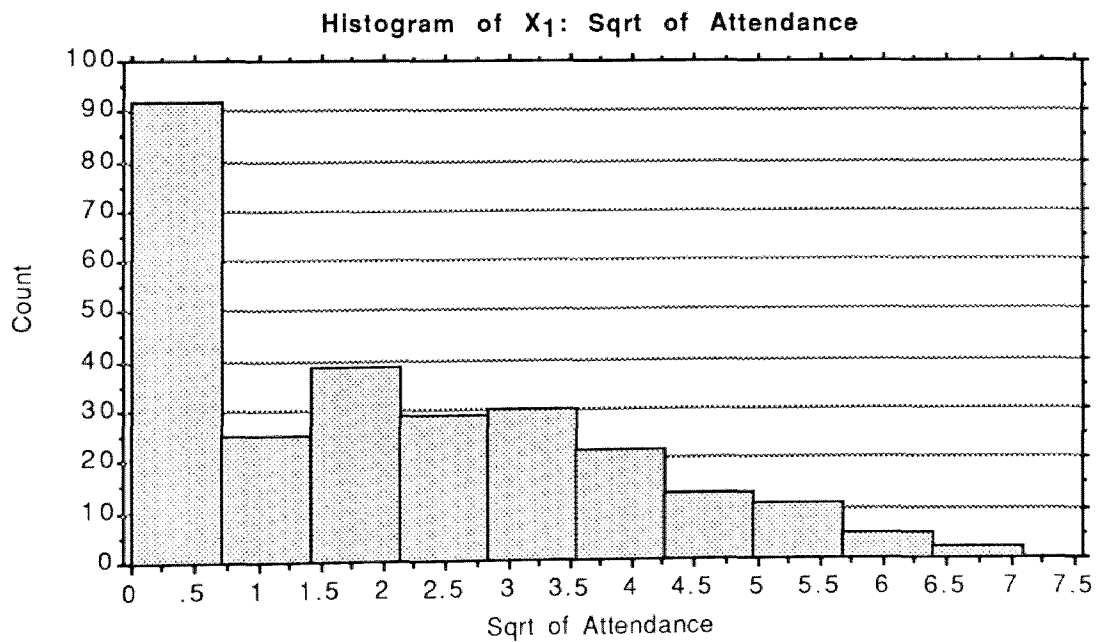


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Square Root Behavior Frequency Distribution Histograms

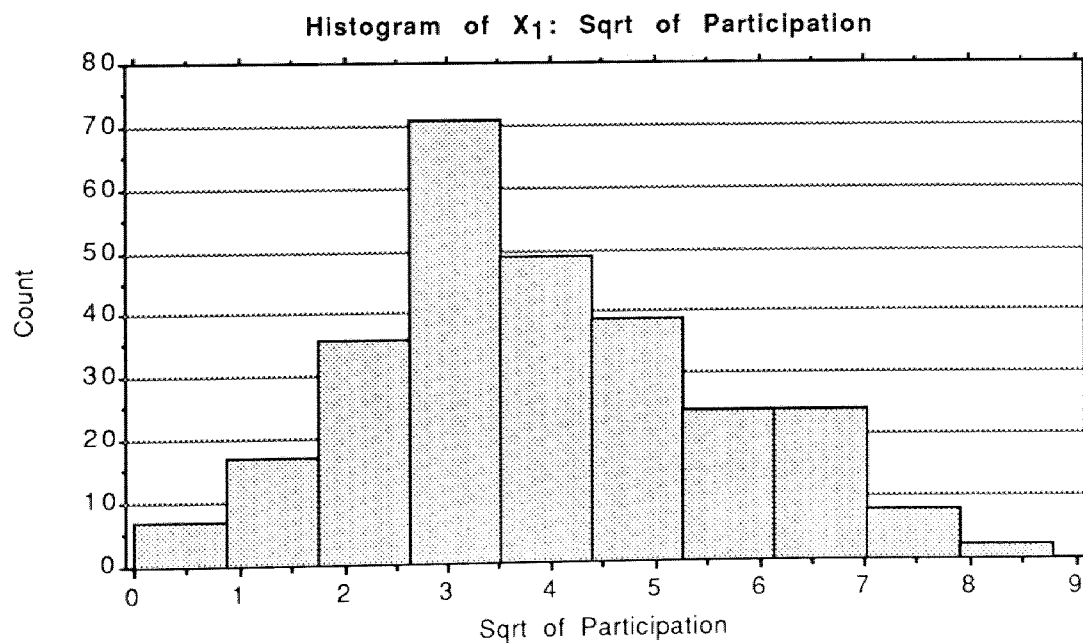
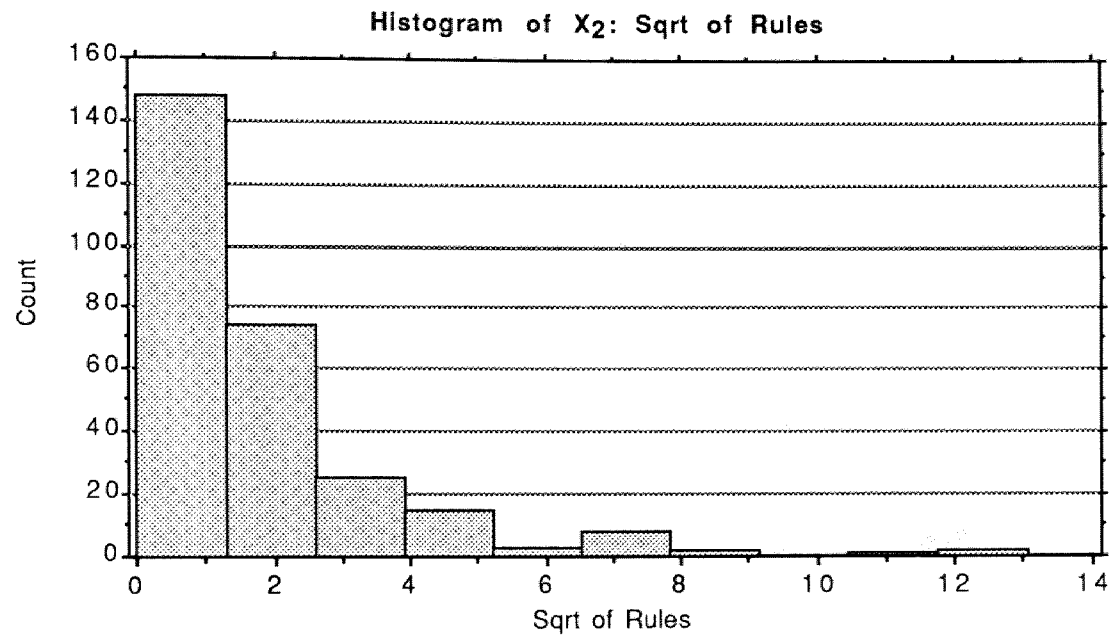


Figure 5, continued

Square Root Behavior Frequency Distribution Histograms

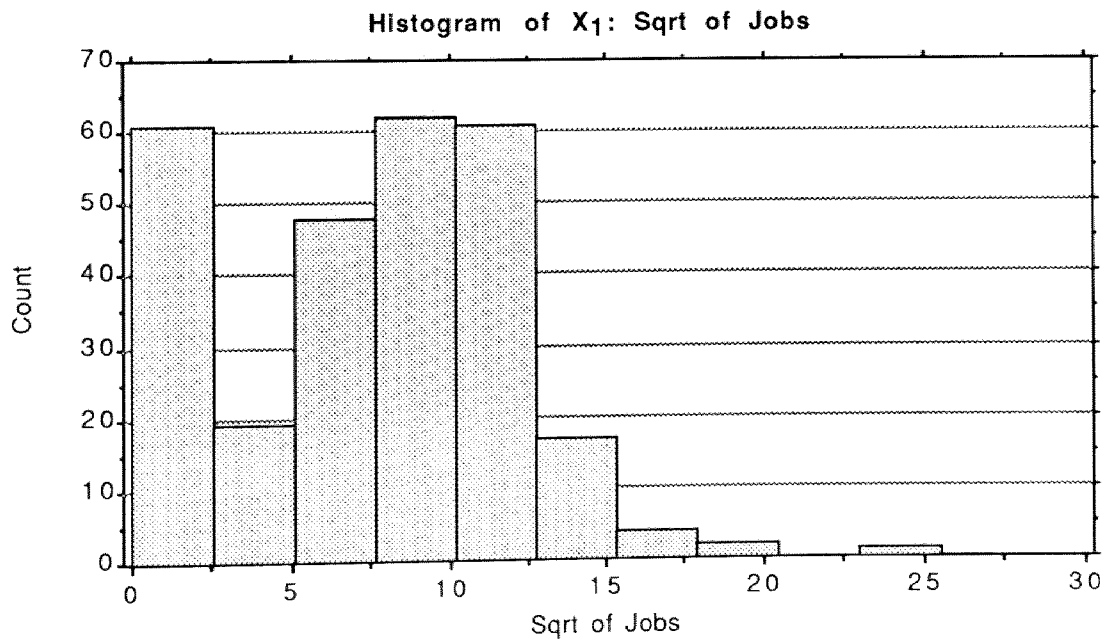
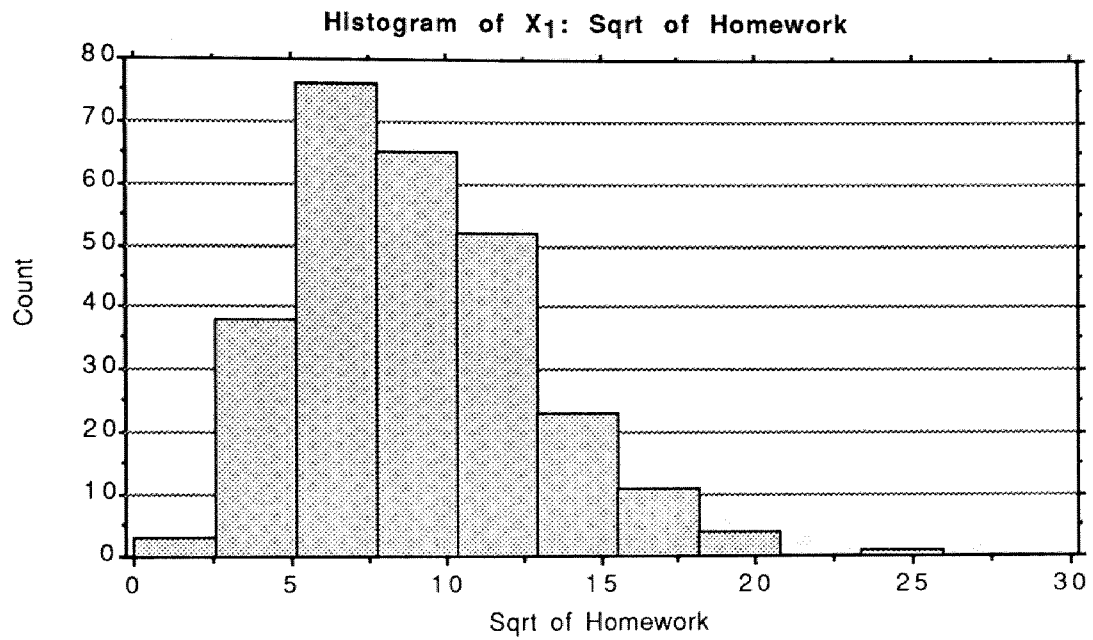
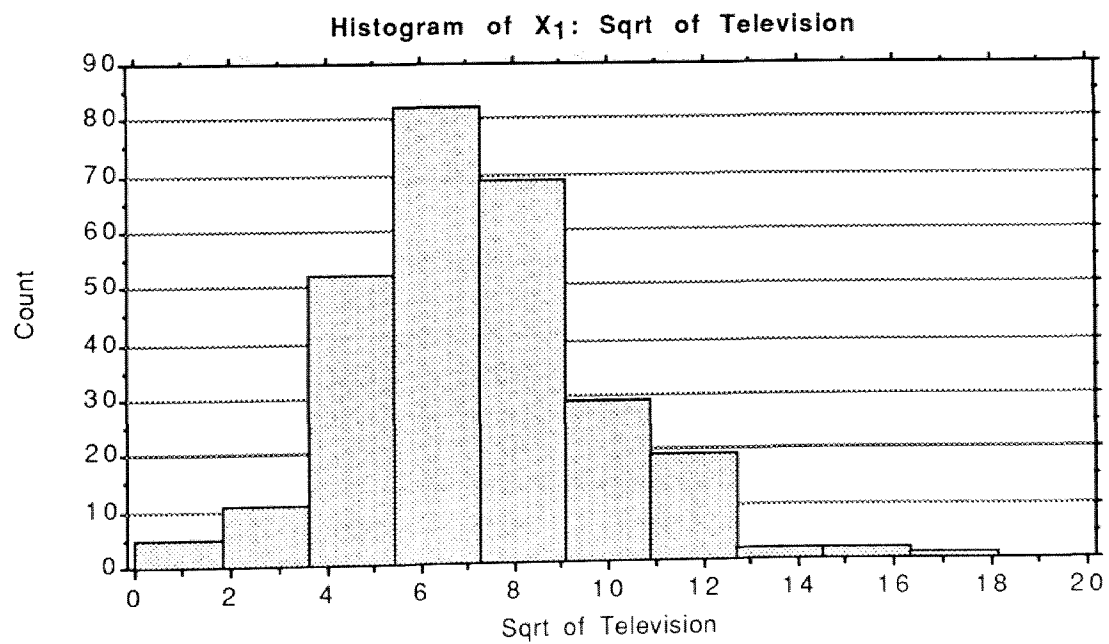
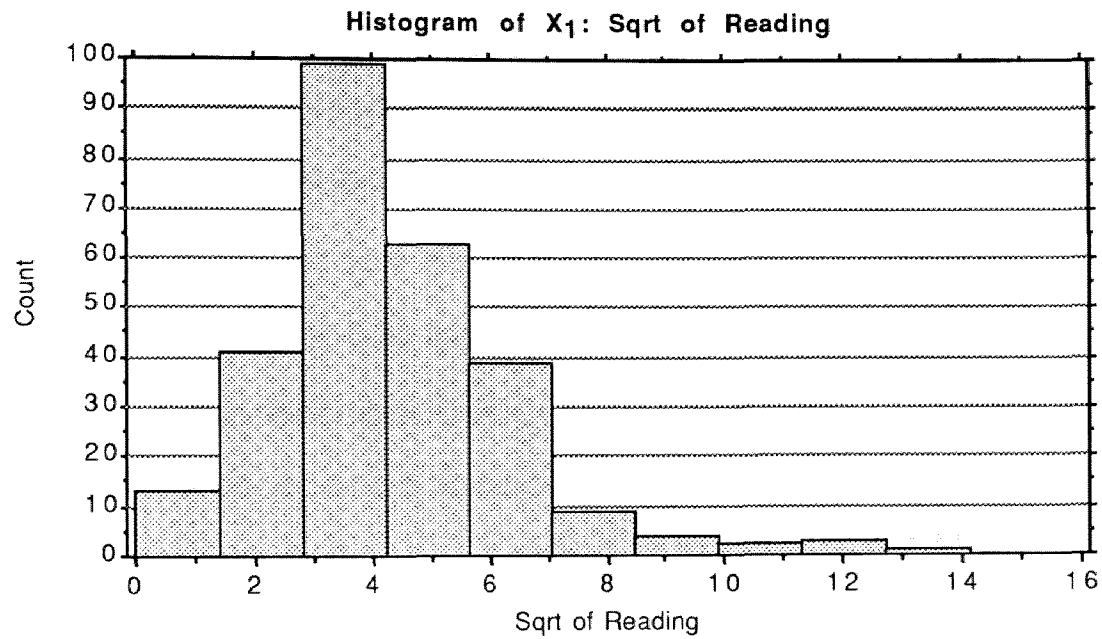


Figure 5, continued

Square Root Behavior Frequency Distribution Histograms



When statistical analysis attempts to explain a phenomenon by examining a number of independent variables with a single criterion variable, there is a danger of correlations among independent variables. To examine the correlations among independent variables, a correlation matrix of the square-root behavior categories was conducted. The results are presented in table two entitled, "Correlation Matrix of Behavior Square Roots". The strongest correlations existed between the square-roots of homework and reading and the square-roots of television and reading with respective correlations of .349 and .334. This reveals relationships which are not significant and play a minor role in the multiple regression results described in the next section of this chapter.

Table 2

Correlation Matrix of Behavior Square Roots

	Attend.	Rules	Partic.	Home.	Jobs	Read.	Telev.
Attend.	1						
Rules	.183	1					
Partic.	-.083	-.23	1				
Home.	-.132	-.199	.205	1			
Jobs	.174	.13	-.168	-.004	1		
Read.	.021	-.092	.086	.349	.063	1	
Telev.	-.054	.03	-.016	.137	.024	.334	1

Note: 28 cases deleted with missing values

### Presentation of the Hypotheses

It was hypothesized that student behaviors are significantly related to academic performance in high school as measured by class percentile rank. A multiple regression of the square-root values of the independent variables was conducted with the criterion variable, class percentile rank. A visual representation of results described in this section is offered in tables three and four entitled, "Multiple Regression of Square-root of Behaviors Table" and "Stepwise Regression of Square-root BehaviorsTable".

---

Table 3

#### Multiple Regression of Square-root of Behaviors Table

##### Multiple Regression Y<sub>1</sub>: Class Rank 7 X variables

DF:	R:	R-Squared:	Adj. R-squared:	Std. Error:
253	.576	.331	.312	22.724

##### Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
Regression	7	62961.914	8994.559	17.419
Residual	246	127027.394	516.372	p = .0001
Total	253	189989.307		

##### Residual Information Table

SS[e(i)-e(i-1)]:	e <sub>≥</sub> 0	e <sub>&lt;</sub> 0:	DW test:
83387.089	133	121	.656

Note: 28 cases deleted with missing values

Table 3, continued

## Multiple Regression of Square-root of Behaviors Table

Parameter:	Value:	Std. Err.:	Std. Value:	t-Value:	Probability:
Intercept	27.555				
Attend.	-1.57	.841	-.101	1.867	.0631
Rules	-1.819	.768	-.131	2.367	.0187
Partic.	6.056	.889	.375	6.809	.0001
Home.	1.696	.421	.233	4.033	.0001
Jobs	-.253	.313	-.044	.81	.4189
Read.	.504	.75	.04	.672	.5024
Telev.	-.891	.59	-.084	1.509	.1325

Confidence Intervals and Partial F Table

Parameter: 95% Lower: 95% Upper 90% Lower: 90% Upper: Partial F:

Intercept					
Attend.	-3.228	.087	-2.96	-.181	3.484
Rules	-3.333	-.305	-3.088	-.55	5.604
Partic.	4.0304	7.809	4.588	7.525	46.362
Home.	.868	2.524	1.002	2.39	16.264
Jobs	-.869	.363	-.77	.263	.656
Read.	-.973	1.98	-.734	1.741	.451
Telev.	-2.053	.272	-1.865	.084	2.279

The multiple regression of the square-root values of the seven behavior categories indicated a R-squared value of .331. This indicates that nearly one-third of the variability of the criterion variable can be explained by the seven independent variables.

Further inspection of the Beta Coefficients indicates that two independent variables, square-root of participation and square-root homework have P-values equal to or less than .0001. The P-value of a third variable, square-root rules was equal to .0187. P-values of .0001 indicate strong significance between square-root of participation and square-root homework with class percentile rank. A P-value of .0187 for the relationship between square-root of rules and class percentile rank indicates significance which is marginal, accepted with low tolerance levels and rejected with high tolerance levels. With that in mind, the significance of this variable to the study will be examined from a perspective of caution and interest.

The standard values indicate the direction of the correlation. The respective standard values of .375 and .233 for square-root of participation and square-root homework indicate a positive relation between these two variables and class percentile rank. The standard value of -.131 for square-root of rules indicate a negative relationship between rules and class percentile rank.

The results of the multiple regression supported three of the seven hypothesis examined in this study. Each hypotheses will be examined in respect to the statistical findings in the order of presentation in the survey. Figures which contain will also be presented in relation to each hypothesis.

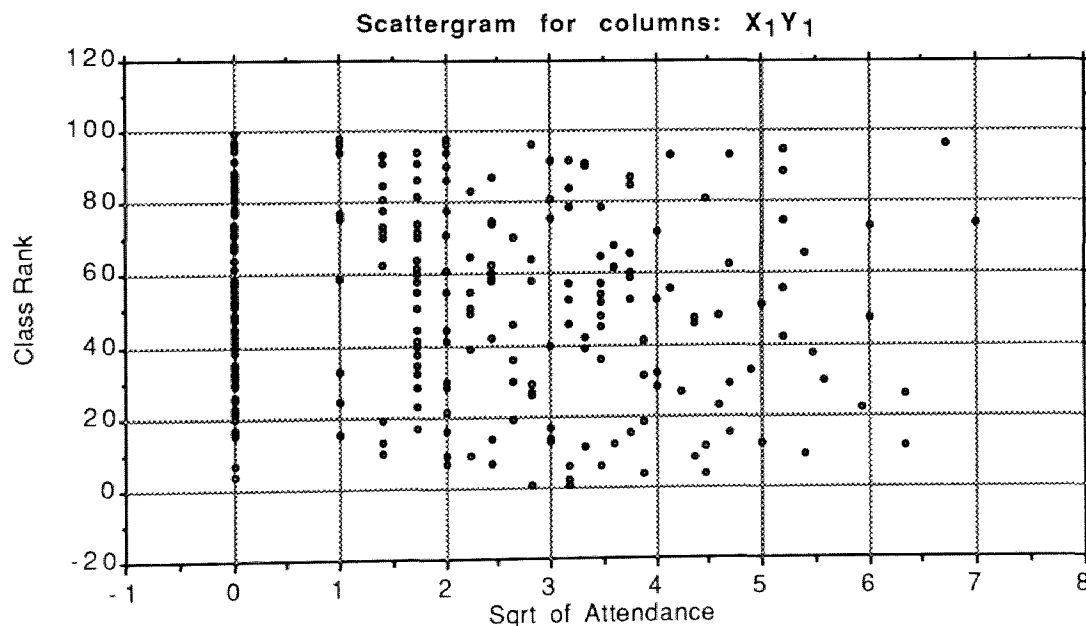


H1 - Class percentile rank is negatively related to student choice of nonattendance of school at the .05 level of significance. The beta coefficient P-value for the square-root of attendance measured by class percentile rank was .0631. The standard value was -.101. The results indicated a negative relationship between class percentile rank and attendance. As students choose to miss school when they are able to attend, their class percentile rank is negatively influenced. A visual representation of the relationship between the square-root of attendance and class percentile rank appears in figure six.

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Figure 6

Scattergram of Multiple Regression of Square-root Attendance



Although the direction of the relationship of attendance agrees with the hypotheses, the results of the study indicates that attendance does not

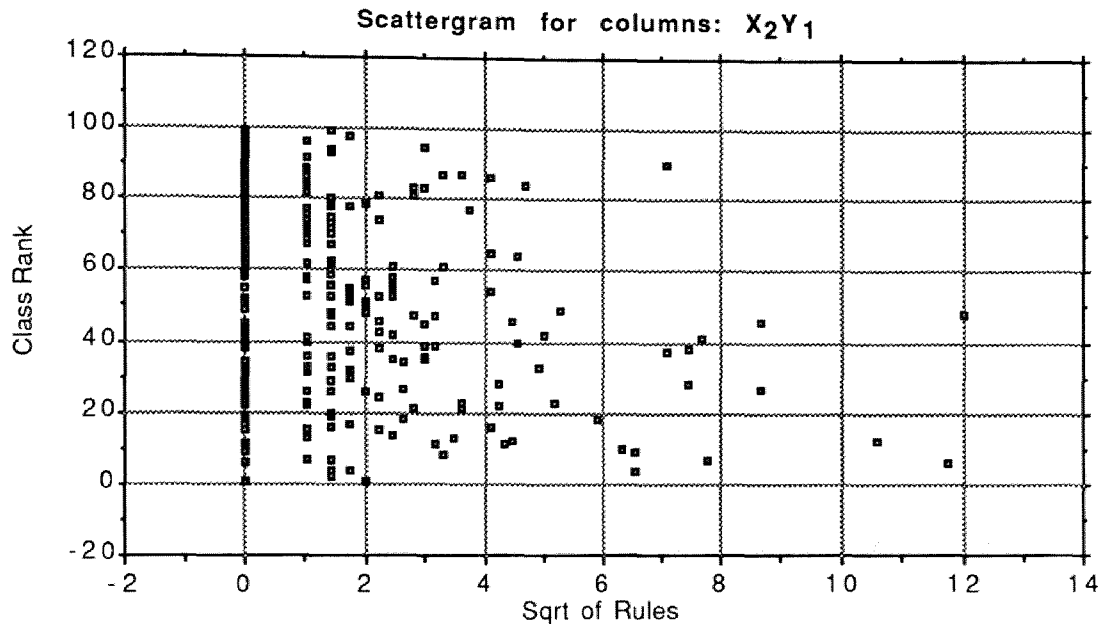
significantly relate to class percentile rank at the .01 level of significance. On the basis of the multiple regression test results, evidence supported the acceptance of the null hypothesis and the rejection of the alternative hypothesis.

H2. Class percentile rank is negatively related to violations of school rules at the .05 level of significance. The beta coefficient P-value for the square-root of rules measured by class percentile rank was .0187. The standard value was -.131. The results indicated a negative relationship between class percentile rank and rules. As students choose to violate school rules, their class percentile rank is negatively influenced. A visual representation of the relationship between the square-root of rules and class percentile rank appears in figure seven.

Although the direction of the relationship of rules agrees with the hypotheses, the results of the study indicates that rule violations do not significantly influence class percentile rank at the .01 level of significance. On the basis of the multiple regression test results, evidence supported the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

Figure 7

Scattergram of Multiple Regression of Square-root Rules



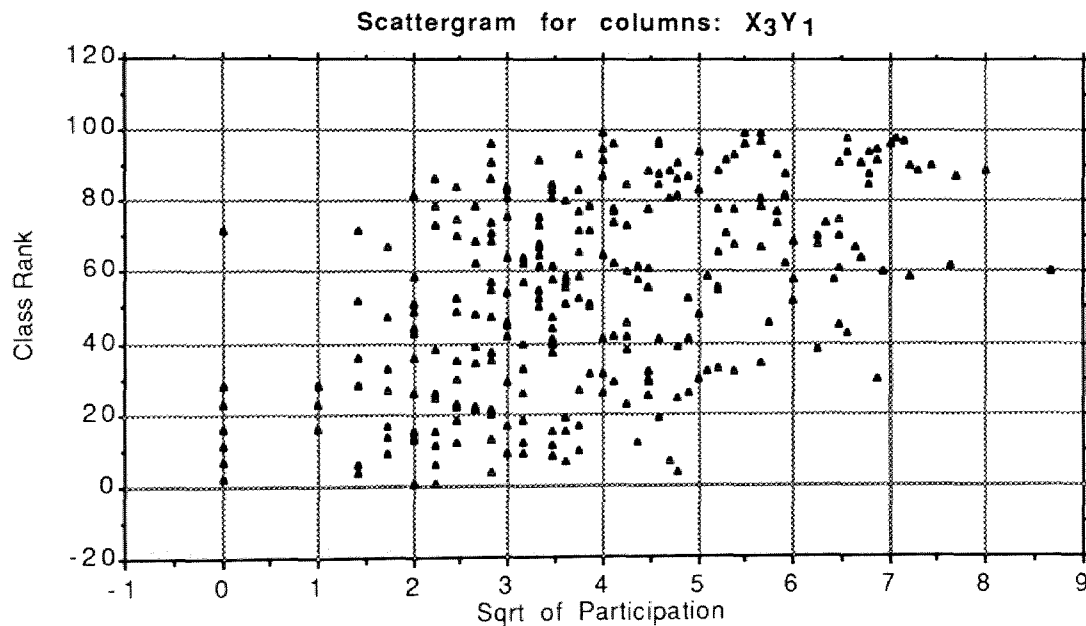
H3. Class percentile rank is positively related to the level of participation in co-curricular activities at the .05 level of significance. The beta coefficient P-value for the square-root of participation measured by class percentile rank was .0001. The standard value was .375. The results indicated a positive relationship between class percentile rank and participation. As students choose to participate in school co-curricular activities, their class percentile rank is positively influenced. The more involved students become in co-curricular activities, the higher their class percentile rank. A visual representation of the relationship between the square-root of participation and class percentile rank appears in figure eight.

The direction of the relationship of participation agrees with the hypotheses and the results of the study indicates that the degree of participation in co-curricular activities significantly influences class percentile rank at the .01 level of significance in a positive manner. On the basis of the multiple regression test results, evidence supported the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

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Figure 8

Scattergram of Multiple Regression of Square-root Participation



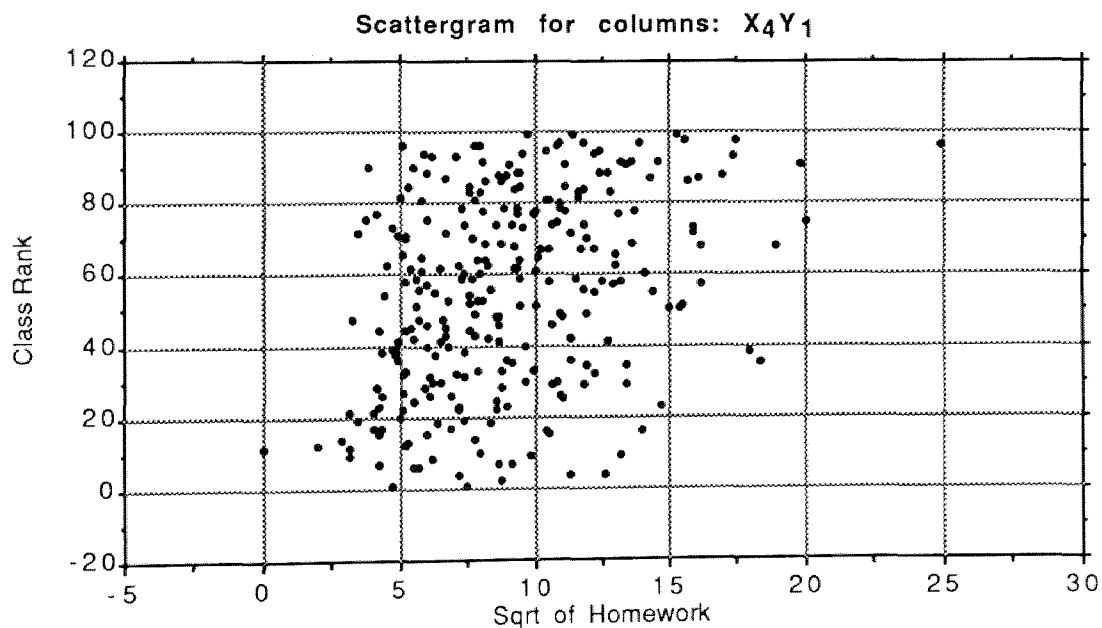
H4. Class percentile rank is positively related to the amount time spent on homework and quality of homework done at the .05 level of significance.

The beta coefficient P-value for the square-root of homework measured by class percentile rank was .0001. The standard value was .233. The results indicated a positive relationship between class percentile rank and homework. As students choose to do their homework, their class percentile rank is positively influenced. A visual representation of the relationship between the square-root of homework and class percentile rank appears in figure nine.

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Figure 9

Scattergram of Multiple Regression of Square-root Homework



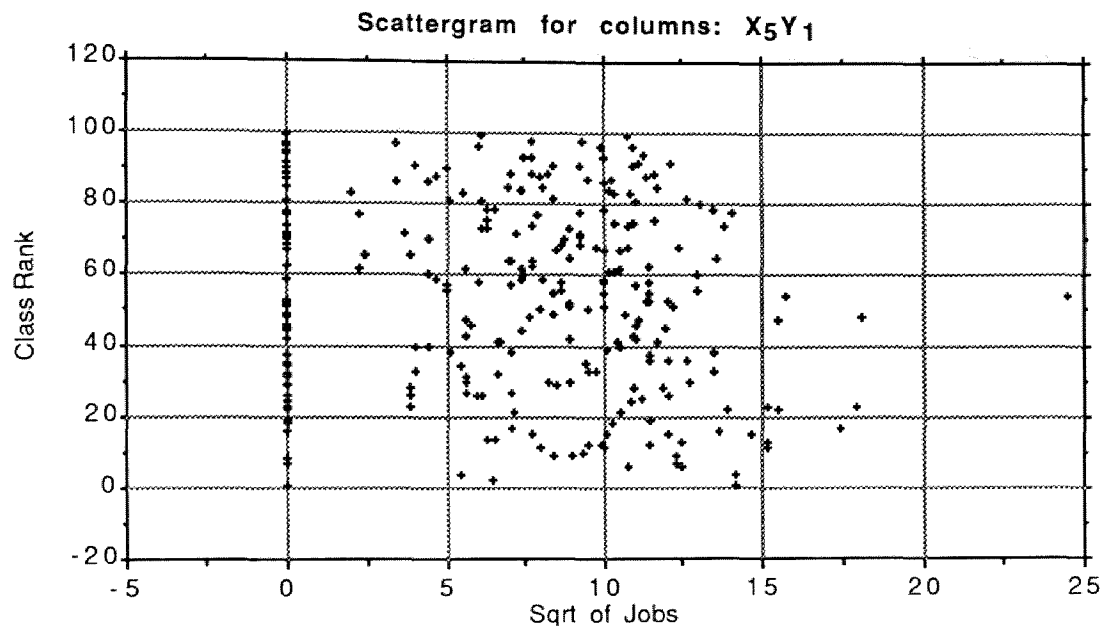
The homework data of this study were a function of the quantity and quality of homework. The time spent on homework was multiplied by a student rating of the quality of the homework done. Student ratings were determined by definitions provided in the survey instrument. The direction of the relationship of homework agrees with the hypotheses and the results of the study indicates that homework is significantly related to class percentile rank at the .01 level of significance in a positive manner. On the basis of the multiple regression test results, evidence supported the rejection of the null hypothesis and the acceptance of the alternative hypothesis.

H<sub>05</sub>. Class percentile rank is not related to the number of hours worked at a job while attending school at the .05 level of significance. (Null hypothesis)

The beta coefficient P-value for the square-root of jobs measured by class percentile rank was .4189. The standard value was -.044. The results indicated a negative relationship between class percentile rank and jobs. A visual representation of the relationship between the square-root of jobs and class percentile rank appears in figure ten.

Figure 10

Scattergram of Multiple Regression of Square-root Jobs



Although the direction of the relationship between jobs and academic performance was negative, the results of the study indicates that jobs are not statistically related to class percentile rank at the .01 level of significance. The results indicate that the number of hours working at jobs during the school year neither enhances or detracts from class percentile rank and supports the null hypothesis. On the basis of the multiple regression test results, evidence supported the acceptance of the null hypothesis and the rejection of the alternative hypothesis.

H6. Class percentile rank is positively related to reading, other than homework at the .05 level of significance. The beta coefficient P-value for the square-root of reading measured by class percentile rank was .5024. The

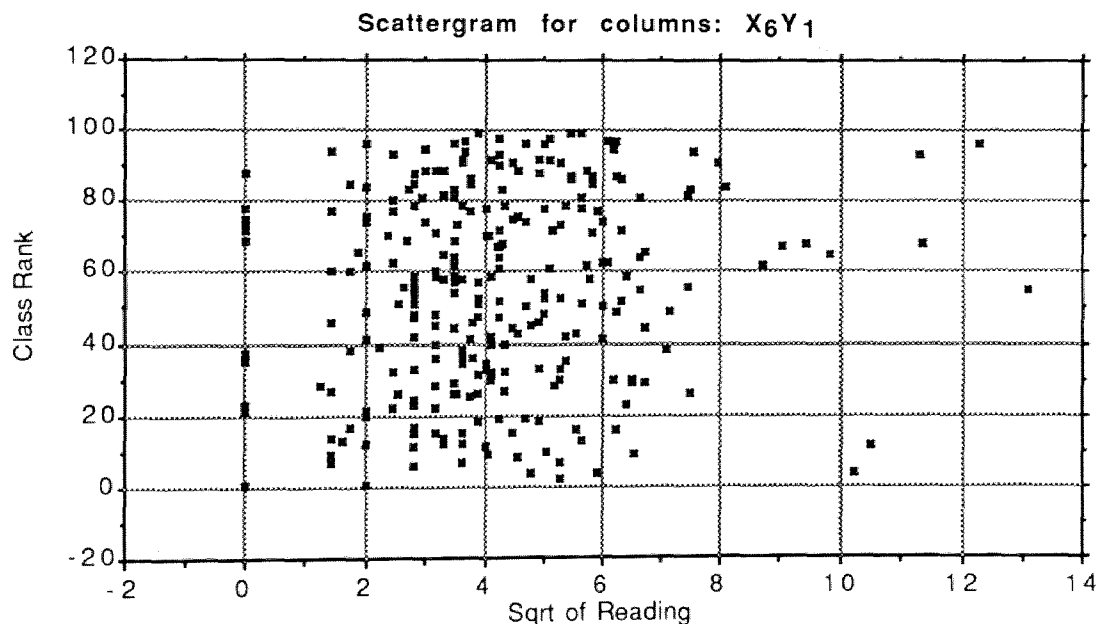
standard value was .04. A visual representation of the relationship between the square-root of reading and class percentile rank appears in figure eleven.

Although the direction of the relationship of reading agrees with the hypotheses, the results of the study indicates that reading does not statistically relate to class percentile rank at the .01 level of significance. On the basis of the multiple regression test results, evidence supported the acceptance of the null hypothesis and the rejection of the alternative hypothesis.

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Figure 11

Scattergram of Multiple Regression of Square-root Reading



H7. Class percentile rank is negatively related to television viewing at the .05 level of significance. The beta coefficient P-value for the square-root of television viewing measured by class percentile rank was .1325. The standard

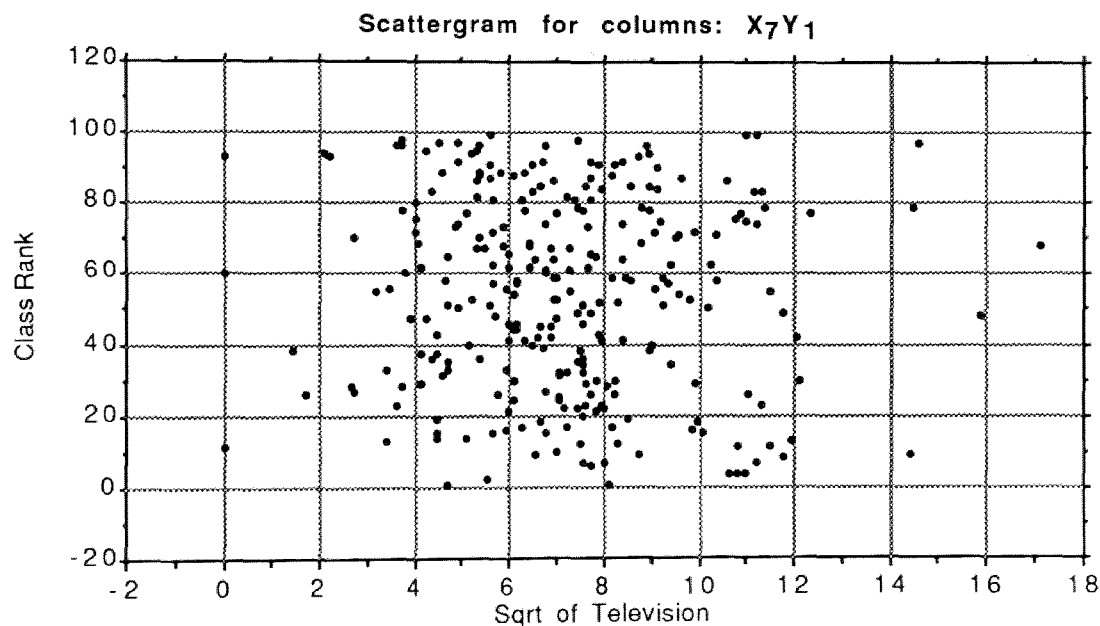


value was  $-.084$ . The results indicated a negative relationship between class percentile rank and television viewing. As students choose to watch television, their class percentile rank is negatively influenced. A visual representation of the relationship between the square-root of television and class percentile rank appears in figure twelve.

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Figure 12

Scattergram of Multiple Regression of Square-root Television



Although the direction of the relationship between television and academic performance agrees with the hypotheses, the results of the study indicated that television viewing was not statistically related to class percentile rank at the  $.01$  level of significance. On the basis of the multiple regression test results, evidence supported the acceptance of the null hypothesis and the

rejection of the alternative hypothesis.

To further examine the relationship between the independent variables and criterion variable, a stepwise regression of the behaviors squared was conducted. The results of the stepwise regression is presented in table four. Although this statistical technique is similar to a multiple regression, all variables are not forced into the equation. Only significantly related variables are selected with the most significant relationship identified first, then the next most significant until all that is left are variables which do not significantly relate to the criterion variable. Recalculations are done after each variable is selected. These calculations examine the amount of variability that each selected variable explains of the criterion variable. These calculations are accumulative in nature and increases as each significantly related variable is selected.

Table 4

## Stepwise Regression of Square-root BehaviorsTable

Stepwise Regression Y<sub>1</sub>: Class Rank 7X variables

F to Enter	4
F to Remove	3.996
Number of Steps	3
Variables Entered	3
Variables Forced	0...0

Residual Information Table

SS[e(i)-e(i-1)]:	e <sub>≥</sub> 0	e<0:	DW test:
80558.99	145	126	.618

Note: 28 cases deleted with missing values

Stepwise Regression Y<sub>1</sub>: Class Rank 7X variablesStep No. 1 Variable Entered: X<sub>3</sub>: Square-root of Participation

R:	R-squared:	Adj. R-squared:	Std. Error:
.473	.223	.22	24.196

Table 4, continued

## Stepwise Regression of Square-root BehaviorsTable

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
Regression	1	42454.878	42454.878	72.516
Residual	252	147534.429	585.454	
Total	253	189989.307		

Step No. 1 Stepwise Regression Y<sub>1</sub>: Class Rank 7X variablesVariables in Equation

Parameter:	Value:	Std. Err.:	Std. Value:	F to Remove:
Intercept	24.607			
Participation	7.644	.898	.473	72.516

Variables Not in Equation

Parameter:	Par. Corr:	F to Enter:
Square-root of Attendance	-.171	7.543
Square-root of Rules	-.215	12.224
Square-root of Homework	.295	23.898
Square-root of Jobs	-.072	1.297
Square-root of Reading	.104	2.743
Square-root of Television	-.042	.442

Table 4, continued

## Stepwise Regression of Square-root BehaviorsTable

Step No. 2 Variable Entered: X<sub>4</sub>: Square-root of Homework

R:	R-squared:	Adj. R-squared:	Std. Error:
.539	.291	.285	23.167

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
Regression	2	55280.747	27640.373	51.502
Residual	251	134708.56	536.687	
Total	253	189989.307		

Step No. 2 Stepwise Regression Y<sub>1</sub>: Class Rank 7X variablesVariables in Equation

Parameter:	Value:	Std. Err.:	Std. Value:	F to Remove:
Intercept	10.777			
Participation	6.766	.878	.418	59.375
Homework	1.936	.396	.265	23.898

Variables Not in Equation

Parameter:	Par. Corr:	F to Enter:
Square-root of Attendance	-.143	5.242
Square-root of Rules	-.179	8.239
Square-root of Jobs	-.085	1.812
Square-root of Reading	.004	.005
Square-root of Television	-.089	1.993

Table 4, continued

## Stepwise Regression of Square-root BehaviorsTable

(Last Step) Step No. 3 Variable Entered: X<sub>2</sub>: Sqrt of Rules

R:	R-squared:	Adj. R-squared:	Std. Error:
.56	.314	.305	22.84

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
Regression	3	59578.516	19859.505	38.071
Residual	250	130410.791	521.643	
Total	253	189989.307		

Step No. 3 Stepwise Regression Y<sub>1</sub>: Class Rank 7X variablesVariables in Equation

Parameter:	Value:	Std. Err.:	Std. Value:	F to Remove:
Intercept	17.694			
Rules	-2.177	.758	-.157	8.239
Participation	6.265	.883	.387	50.342
Homework	1.755	.396	.241	19.692

Variables Not in Equation

Parameter:	Par. Corr:	F to Enter:
Square-root of Attendance	-.119	3.594
Square-root of Jobs	-.068	1.162
Square-root of Reading	4.146E-4	4.280E-5
Square-root of Television	-.081	1.656

The stepwise regression selected participation as the most significantly related independent variable. The R-squared value was .223. As mentioned earlier, the multiple regression indicated that the R-squared value of all seven variables forced into the equation was .331. Comparing the two R-squared values illustrates the extent to which participation contributes to the total R-squared value for all seven variables. Participation accounts for over two-thirds of the R-squared value for all seven independent variables. Refer to table 4.12 entitled, "Stepwise Regression of Sqrt Behaviors" for a visual representation of the stepwise results.

The next most significantly related variable selected was homework. The R-value of participation and homework together was .291. Comparing the two R-squared values illustrates the extent to which participation and homework contribute to the total R-squared value for all seven variables. Participation and homework account for over 87.9 percent of the R-squared value for all seven independent variables.

The next most significantly related variable was rules. The R-value of participation, homework and rules together was .314. Comparing the two R-squared values illustrates the extent to which participation, homework and rules contribute to the total R-squared value for all seven variables. Participation, homework and rules account for over 94.9 percent of the R-squared value for all seven independent variables. Although the multiple regression resulted in questionable significant relationship between rules and class percentile rank,

the stepwise regression selected this variable to explain more fully the variability of class percentile rank.

### Summary

The multiple regression and stepwise regression of the data reveal that nearly one-third of the variability of class percentile rank can be explained by the seven independent variables selected for this study. Further inspection of the results indicates that three variables, participation, homework and rules account for 94.9 percent of that total.

Three and possibly four hypotheses were supported by the results of the statistical analysis. The significant relationship of rules with class percentile rank is questionable, but if the results of the stepwise regression were utilized, hypotheses relating to participation, homework, rules and jobs would be substantiated.



## CHAPTER 5

### Summary, Conclusions, Discussion, and Recommendations

#### Overview of the Study

This study was designed to examine the relationship of student behaviors on class percentile rank. Behaviors of interest in this study included attendance, rules, participation, homework, jobs, reading, and television. Two hundred and eighty two seniors from four high schools of North Central and northeast Iowa responded to a survey instrument which contained questions concerning their behavior in high school, specific to the seven behaviors of interest. Individual intensity levels of these behaviors were compared to each student's percentile rank. Multiple regression and stepwise regression tests were conducted to examine the relationship between student behaviors and class percentile rank.

The previous chapters included

1. background of the problem, rationale and significance of the problem, statement of the problem, and general hypothesis.
2. introduction to the review of the literature pertaining to studies of student behaviors as they relate to academic achievement.
3. procedures, sample, instrumentation, data collection procedures, research design, research hypotheses, treatment of the data, and limitations.
4. the findings as explained in narration and in tables and figures.

The primary purposes of this chapter were to summarize the findings of this research study and draw basic conclusions implied by the findings. Finally, several recommendations were presented based on the implications and conclusions of this research study.

### Overview of the Results

The findings of this study support the general hypothesis that student behaviors are related to academic achievement. When the seven independent variables of the study were forced into a multiple regression analysis, the results indicated that behaviors accounted for 33.1 percent of the variability of the criterion variable, class percentile rank. With nearly one-third of the variability of class percentile rank relating to behaviors that students choose to exhibit or choose not to exhibit, a closer inspection of the results compared to the research contained in the literature specific to academic achievement, appears warranted.

### Attendance

Attendance did not indicate a significant relationship with class percentile rank in this study. Although the review of the literature did identify studies which indicated that attendance was significantly related to academic achievement, the definitions of attendance utilized in those studies were quite different from those of this study. Rutter (1979) defined attendance to include all days present at school, with no consideration given to the reasons for

nonattendance. In this study, attendance was defined to be the number of days present at school and days not present at school due to reasons other than choosing not to attend. Student nonattendance at school was only of interest when the student made a decision not to attend school when he or she was able to attend. This study was interested in the behaviors of students as they relate to academic achievement which students have the ability to control. Generally, students do not have control of absences due to illness, funerals, and family emergencies. To include them in the study would limit the student's role in controlling absences.

The Rutter study indicated that schools with high levels of attendance "tend also to have high levels of exam scores" (1979, p. 92). Attendance was significantly related to test scores for all ability levels. Although interesting, the value of this information is limited. The definition of attendance in this study does not lend itself easily to interpretation for recommendations for improvements in student academic achievement. If it could be said that the majority of the absences were due to illness, then a logical recommendation would address the issue of the condition of general student health. Wellness programs could prove to be beneficial in the quest to improve student health which may relate to the number of absences due to illness.

In this study, attendance, as it is defined, does not significantly relate to class percentile rank. Students choose to attend or miss school when they are able to attend regardless of class percentile rank. Although the direction of the

relationship agrees with the hypotheses, the strength of the relationship was not significant in explaining the variability of class percent rank.

### Rules

Rules did indicate a marginally significant relationship with class percentile rank in this study. The review of the literature identified studies in which discipline was significantly related to academic achievement. According to the results of the Burton study, poor discipline was an indication of poor academic achievement (Burton, 1976, p. 12). Myers indicated that poor discipline affected the student's perception, of low performance relative to classmates (Myers et al., 1987, p. 30). In this study, rules was defined by utilizing the number of student violations of school rules, disciplined in high school. Individual students were asked to report the number of times they were disciplined in high school. Examples of discipline interventions included detention, suspension, expulsion, referral to the office, loss of privileges, ineligibility, etc.

The number of times students were disciplined for violations of school rules was negatively related to class percentile rank. The greater the number of rule infractions disciplined by school officials, the lower the class percentile rank tended to be. The P-value of the rules category was .0187, significant enough to be selected by a stepwise regression as being a good indication of class percentile rank. Rules accounted for seven percent of the variability explained by the seven variables forced into the equation of the multiple

regression. Although not as strong an indication of class percentile rank, a negative relationship exists.

### Participation

Participation indicated a strong significant relationship with class percentile rank in this study. The review of the literature identified studies with conflicting results. Studies by Soltz (1986), Harvancik and Golsan (1986) and Leonardson (1986) indicate that grade point averages of students who participate in extracurricular activities are significantly higher than nonparticipating students. Whereas Rutter (1984) and portions of Harvancik and Golsan's study (1986) indicate little support for participation in extracurricular activities as a positive factor for higher academic achievement.

As mentioned in chapter two, the lack of a standardized definition of extracurricular activities made comparisons between studies difficult. One study defines extracurricular participation to include only athletic participation but another includes clubs and organizations. The lack of a standardized definition of academic achievement was also a problem. One definition of student academic achievement used grade point averages and another used college entrance exam results.

This study found participation in athletics, clubs and organizations to be a strong indication of class percentile rank. Participation alone accounts for a R-squared value of .223 in a stepwise regression with class percentile rank. This accounts for over sixty-seven percent of the variability of class percentile rank

explained by all seven variables forced into a multiple regression equation. The results indicate that class percentile rank tended to be higher as participation in extracurricular activities, clubs and organizations increased.

### Homework

Homework indicated a strong significant relationship with class percentile rank in this study. The review of the literature identified studies with similar results. Foyle and Bailey (1985) indicated that homework does make a difference in student achievement. Improved student achievement is produced by either preparation homework or practice homework (p.8). It was found that homework which is regularly assigned, clearly stated, regularly collected, promptly graded, and promptly returned increases student achievement when compared to students who were not assigned homework (p.7). Another study indicated that one to two hours of homework a day were associated with the highest levels of reading performance while those studying more than two hours a night on homework with the highest performance levels (Ward, 1983, p. 45).

This study was not only interested in the volume of homework, but also the quality of homework. The data collected included the number of hours studied and student rating of the quality of homework done as compared to five quality definitions. The number of hours were multiplied by the quality rating for statistical analysis.

The results yielded a significant relationship between homework by quality data and class percentile rank. The stepwise regression selected homework second in the regression equation. This indicates that homework accounted for the second most variability of class percentile rank. Homework accounted for 20.5 percent of the variability of class percentile rank explained by all seven variables forced into a multiple regression equation.

The P-value of homework in the multiple regression was .0001. The positive standard value of .233 indicates a positive relationship between the quantity and quality of homework with class percentile rank. As the quantity and quality of homework increased and improved, class percentile rank tended to be higher.

### Jobs

Jobs did not indicate a significant relationship with class percentile rank in this study. The review of the literature did not identify studies which indicated that jobs were significantly related to academic achievement. Teachers have indicated that jobs conflict with school performance. Although the attitude exists, non-working students did not appear to do more school work than working students (McNeil, 1984, p.25).

There was little literature jobs' available on influence on academic achievement. A temptation in this study was not to agree with the research and to develop a hypotheses which agreed with the teachers in the McNeil study, that is that jobs do negatively affect class percentile rank. However, the null

hypotheses was utilized to agree with the research. Another temptation was not to include jobs as one of the factors utilized in the study because of the lack of research in the literature.

It was decided to include jobs in the study for two reasons. The first was that jobs satisfied the requirements for factors desired for this study. It is a behavior in which students choose to participate. Students may choose to work during the school year or choose not to work. The second reason was the desire to uncover new information concerning jobs and their relationship to class percentile rank.

The results agreed with the McNeil study. Jobs were not significantly related to class percentile rank, thus supporting the null hypotheses. The standard value of rules was  $-.044$ , indicating the direction of the relationship was negative, however the P-value was  $.4189$ . Although the direction of the relationship agrees with the teachers of the McNeil study, the strength of the relationship was not significant in explaining the variability of class percentile rank.

### Reading

Reading did not indicate a significant relationship with class percentile rank in this study. The review of the literature identified studies which indicated that reading was significantly related to academic achievement. Although none of the studies identified in the literature approached reading in the same



manner as this study, their findings were of interest and contributed to the knowledge of student reading.

Reading, other than homework, has been reported as being a significantly related to reading comprehension, an important skill for learning in American high schools. According to a study by Ward (1983), highest reading performance for 17-year-olds occurred among those who read for one to two hours a day and watched less than an hour of television. Lowest performance occurred for those who watched over four hours of television a day. Even among this group those who read one to two hours held an advantage (p.39).

Few teenagers read in their spare time, but many do not appear to be spending time on homework either (Ward, 1983, p. 43). As role models, parents who read may cultivate reading in their offsprings (Sampson-Malone, 1986, p. 2456). Habits viewed by children may be imitated at a young age and reinforced during adolescence.

It would appear that this is an area where much can be done to increase the time currently spent by most students on spare-time reading and homework. However, the results of this study indicate that reading does not significantly relate to class percentile rank. The standard value of reading was .04, indicating the direction of the relationship was positive, however, the P-value was .5024. Although the direction of the relationship agrees with the hypotheses, the strength of the relationship was not significant in explaining the variability of class percentile rank.

## Television

Television viewing did not indicate a significant relationship with class percentile rank in this study. The review of the literature identified studies which indicated that viewing television was significantly related to academic achievement. Ward (1983) found that 17-year-olds who watched television, did so at the expense of homework time. It was also found that 17-year-olds who watched under an hour of television a day, were consistently associated with the highest levels of reading comprehension. As television viewing increased, achievement levels for most 17-year-olds decreased (Ward, 1983, p. 35). Uguroglu and Walberg (1968, p. 8) also found significant negative correlations of television viewing with achievement.

With the results of this study concerning homework and its relationship to class percentile rank, it would seem logical to assume that viewing television would relate negatively to homework and class percentile rank. If the results of the Ward study were reliable, television viewing would decrease the number of hours spent on homework, a behavior found to be significantly related to class percentile rank.

However, the correlation of the seven independent variables indicated a positive relationship between television viewing and homework. Although not a significant relationship at .137, the results did not support the Ward study.

With the relationship between television viewing and homework positively relating to one another, it was not surprising when television viewing did not significantly relate to class percentile rank. The standard value of

reading was  $-.084$ , indicating the direction of the relationship was negative, however, the P-value was  $.1325$ . Although the direction of the relationship agrees with the hypotheses, the strength of the relationship was not significant in explaining the variability of class percentile rank.

### Implications of the Results

The results of this study revealed information concerning relationships between class percentile rank and seven student behaviors, behaviors for which students choose the intensity level of involvement. Students for the most part, determine the number of days they choose to miss school when they are able. They also determine the number of times they violate school rules and the number of co-curricular activities in which they participate. Students determine the number of hours they spend on homework, jobs, reading, and viewing television. The implications of these relationships as they relate to theory, research and practice are examined in the following sections.

### Implications of the Results for Theory

Ex-post facto research design was utilized to examine student behaviors of high school seniors that have already occurred before the study was conducted. This design resembles techniques utilized by a news reporter writing a feature article for his or her interested readers. In an attempt to gather information and make sense of the information collected, this researcher utilized a survey instrument and multiple regression techniques. Although this

method of research typically falls short of the control of an experimental design, its strength lies in the examination of phenomena which occurs in the real world, not in an environment which is artificially reproduced.

Ex-post facto studies typically lend themselves to statistical analyses such as multiple regressions. The multiple and stepwise regressions attempt to make sense of two or more independent variables as they relate to a single criterion variable. After gathering larger amounts of data, making sense of the relationships that exist is of great interest.

The implications of this study for theory are in the way of preliminary research. The results of this study, together with similar research interested in variables relating to student academic performance, prompt studies with more rigorous controls, these would lend themselves to higher confidence levels in reliability, validity, and replication. Experimental and quasi-experimental designs are often used to more stringently examine the claims of preliminary studies and therefore examine significant relations between variables of interest. The greatest difference, however, is that experimental design attempts to examine causal relationships, whereas ex-post facto design reveals association between variables.

Study results which consistently supported hypothesis gives strength to the development of theory. The results of this study support those in the literature in areas of homework, participation, rules and jobs. The intensity of consistency of those relationships may indicate the need for further study,

prompting researchers to formulate behavioral theory concerning behaviors affecting academic achievement.

### Participation

The relationship of participation in co-curricular activity indicated a strong, positive relationship with class percentile rank. As the intensity of participation increases, class percentile rank tends to improve. The strength of the relationship, between participation and class percentile rank, explained over twenty-two percent of the total variability of class percentile rank. The variability of all seven variables of this study accounted for 33 percent of the variability of class percentile rank; participation accounted for over 67 percent of that figure.

The results of this study concerning participation and its positive influence on class percentile rank, together with the majority of other studies in the literature (Soltz, 1986; Harvancik & Golsan 1986; and Leonardson, 1986), may substantiate the need for further study. Through continued study of the relationship between participation and academic achievement, hypotheses may eventually become theory. Recommendations for the direction of those studies appear in a later section of this chapter.

## Rules

Rules indicated a negative relationship with class percentile rank. As students choose to violate school rules and were disciplined, class percentile rank was negatively affected. The intensity of this behavior related to the degree to which class percentile rank was influenced. Students who were disciplined the most, tended to have the lower class percentile ranks.

The relationship between rules and class percentile rank indicated significance with a P-value of .0187. Rules explained 2.3 percent of the variability of class percentile rank and 6.9 percent of the variability explained by all seven independent variables forced into the multiple regression equation. Although rules did not possess the ability to explain as much variability in class percentile rank as participation and homework, the significance of the relationship warrants the attention of future researchers.

Discipline has been identified in other studies as being significantly related to student performance (Burton, 1976; Myers, 1987). Although this study defined rules as the number of times students were disciplined in high school, the results were consistent with those of the past. These findings, together with the belief that discipline possesses the ability to negatively influence academic performance ((National Commission on Excellence, 1983; Gallup & Clark, 1987; Boyer, 1984), supports the need for further study. Recommendations for the direction of those studies appear in a later section of this chapter.

## Jobs

Jobs did not indicate a significant relationship with class percentile rank. The number of hours students chose to work did not significantly relate to their class percentile rank. The relationship between jobs and class percentile rank resulted in a P-value of .4189. Although jobs did not possess the ability to explain the variability of class percentile rank, the results were consistent with the research contained in the literature (McNeil, 1984) and should be of interest to future researchers. Recommendations for the direction of those studies appear in the next section of this chapter.

## Implications of the Results for Further Research

There is a need in education to better understand academic performance. The American educational system is expected to improve the academic performance of its students. However, reports which commission schools to improve student performance, devote little time addressing the role of students as it relates to academic performance.

Student behavior is significantly related to academic performance. The behaviors which students chose outside of the classroom, positively or negatively influenced their academic standings among their peers. The results of this study not only support this claim, but also demand that educators pay more attention to the behaviors of students. By better understanding the relationship between student behaviors and academic performance, schools

equip themselves with valuable information to assist them in their quest to improve that performance.

The results of this study indicate significant relationships between participation, homework and rules and class percentile rank. Together, these three variables accounted for 31.4 percent of the variability of class percentile rank. The strength of these results cannot be ignored by schools wishing to improve the academic performance of their students. If not taken into consideration, schools would neglect over 31 percent of their ability to influence academic performance.

Although four of the seven behaviors of this study did not prove to be significantly related to class percentile rank, these behaviors should not be ignored. It is not only valuable to study relationships which significantly relate to class percentile rank, it is also important to reveal those behaviors that do not relate to class percentile rank. Although further study of these variables may be warranted, it appears that efforts to influence student behaviors in areas of attendance, jobs, reading and television, as defined in this study, would not significantly influence class percentile rank.

Future researchers concerned with student behaviors and their influence on academic performance need to more closely examine the behaviors which significantly relate to performance and attempt to better understand those behaviors. Identification of behaviors which influence academic performance is valuable information and needs to be utilized by schools wishing to improve the performance of their students, but questions still exist as to how this information



can be utilized. Better understanding the behaviors which relate to academic performance may reveal practical applications and strategies for students and parents interested in improving academic performance.

Why and how does participation in co-curricular activities influence academic performance? To answer these questions and similar questions concerning other student behaviors, researchers need to more closely examine the qualities associated with those behaviors. It may be that participation in activities outside the classroom indicates higher self-image which may be strongly related to academic performance. Other qualities could include leadership, self-discipline, commitment to others, goal setting, time management, decision-making, higher level thinking skills, following directions, determination, and others. Other student behavior should be examined in much the same manner. Homework and rules may also be indications of qualities possessed by students which relate to academic performance.

This study included 282 seniors from four high school schools of varying sizes in rural North Central Iowa. Future studies should be expanded to include representative groups of seniors throughout the state of Iowa from urban schools and schools of other geographic regions. This would strengthen arguments claiming significant relationships for all students and not be limited to a particular geographic region.

Future studies should also expand the size of the sample examined. Generally, it is recommended to include a minimum of fifteen subjects for every independent variable examined in a study. Examination of student behaviors in

greater detail will require researchers to utilize more independent variables and the need to expand the sample size.

As with many studies that utilize surveys for gathering information, the management of data was a tedious process. The volume of information entered into the statistical analysis consumes a great deal of time and energy. It is recommended that future studies consider the advantages of utilizing optical readers for entering raw data into a computer for statistical analysis. This would prove to be extremely valuable in studies involving larger numbers of subjects and independent variables. Although the survey may result in marking errors and appear not to be as personal as the survey utilized in this study, the advantages appear to outweigh the disadvantages.

It is recommended that similar methods be utilized for gathering information employed in this study. Standardization of instructions, consent form, survey instrument and procedures utilized in this study proved to be well suited for gathering information concerning student behaviors. Reliability measures of the instrument indicated that the instrument consistently gathered the same information with correlations ranging from .881 to .988. Although students were encouraged to participate in the study, the option not to participate was always available. Of the 282 students surveyed, twenty-eight chose not to answer all or portions of the survey. This represents a 9.2 percent rate of participation. Although the lower ten percentile of class rank represented the lowest rate of participation for the study, the group was still well represented.

### Implications of the Results for Practice

The results of this study do not demonstrate causal relationships between student behaviors and class percentile rank. Ex-post facto studies describe relationships between independent and dependent variables. The results of this study indicate that class percentile rank is significantly associated with participation in co-curricular activities, homework, and rules. Participation and homework are positively related to class percentile rank while rules are negatively related to class percentile rank. Students who chose to participate in co-curricular activities, spent time doing homework in a quiet environment conducive to study, and were not disciplined for violations of school rules, tended to have better class percentile ranks than their peers who did not.

Although causal relationships cannot be demonstrated, it would seem appropriate that students wishing to improve their academic performance, would choose to participate in co-curricular activities, do homework and not violate school rules. Parents interested in higher academic performances from their children, would encourage their children to become more involved in co-curricular activities, study more, and follow school rules. Schools wishing to improve academic performance of their students, should take into account the relationships between student behaviors and academic performance.

### Summary

A nation assumed that falling standardized test scores of students was the result of a failing educational system. Schools alone are expected to solve the problem of falling test scores without considering other intervening factors.

The results of this study suggest that the student behaviors significantly relate to academic performance and have been neglected as a contributing factor. As a result, well-meaning legislators and school officials mandate simple solutions to address a perceived problem they do not completely understand without the support of empirical evidence. While schools lengthen the school day, raise graduation requirements, and conform to state minimum curriculum standards, significant relations between student behaviors and academic performance are ignored. This study suggests that greater sensitivity to the student's role in academic performance be considered in the quest to improve educational effectiveness.

This study examined the influence of seven independent variables on a single criterion value, class percentile rank. The results indicated that three variables explained over 31 percent of the variability of class percentile rank. Student participation in co-curricular activities proved to possess the greatest ability to describe the variability of class percentile rank. As the level of participation increased, class percentile rank tended to improve.

Homework also proved to possess the ability to describe the variability of class percentile rank. The homework was defined to include not only the number of hours studied, but also the quality of the environment in which homework was done. As the level of homework increased, class percentile rank tended to improve.

While participation and homework were positively related to class percentile rank, rules proved to be negatively related to class percentile rank.

Rules was defined to consider the number of times students were disciplined for violations of school rules. As the level of rules increased, class percentile rank tended to be negatively influenced.

Although other independent variables of this study did not prove to be significantly related to class percentile rank, that knowledge is also valuable. Not only is it important to examine those areas which are significantly related to academic achievement, but also those that do not. It seems logical that those who read more, watch television less, attend school more, and work fewer hours would perform better academically. Well meaning schools and parents wishing to encourage their children to improve their academic performance by changing student behaviors in these areas, do so without any evidence that these behaviors significantly relate to academic performance.

This study does not attempt to demonstrate that participation, homework, and rules cause class percentile rank to be positively or negatively affected. However, it does indicate that these variables are significantly associated with class percentile rank. Not only do the results encourage further study in the relationships of student behaviors with academic performance, but also demonstrate the need for legislators and parents critical of schools for the poor performance of their students, to explore other explanations for academic performance.

With one-third of the variability of class percentile rank explained by seven behaviors of this study, it appears that collaborative efforts of schools and parents to improve student performance would prove to be most effective. This

may partially explain why students of other nations and Oriental students in American schools appear to perform better than their American counterparts (McGrath, 1983). The culture, parents, and students of these families may value academic performance more, hold greater respect for their teachers, and work harder. It is the task of the school systems to capitalize on public opinion which demands improvements in student academic performance and foster cooperative relationships between home and school. This study suggests that parents encourage students to participate in those behaviors which positively relate to higher academic performance and discourage student behaviors which negatively relate to academic performance.

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Appendix A  
Student Behavior Survey

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For office use only. Please do not respond.

\_\_\_\_\_ Class Rank

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**Directions:**

The seven items of this survey ask for information concerning behaviors of your **four years in high school**. Please respond to these questions **as accurately as possible**, taking time to reflect on activities of your high school years. If you attend a three year high school, please include the ninth grade of your junior high school.

**1. Attendance**

- a. Have you ever missed a **day** of high school when you were **able to attend**? (Please check with a "X")

\_\_\_\_\_ Yes (if yes, go to question 1b)

\_\_\_\_\_ No (if no, go to question 2a)

- b. How many **days** did you miss **each year** of high school when you were able to attend?

\_\_\_\_\_ Freshmen

\_\_\_\_\_ Junior

\_\_\_\_\_ Sophomore

\_\_\_\_\_ Senior

## Appendix A, continued

### Student Behavior Survey

#### 2. Rules

- a. Have you ever been **disciplined for infractions of high school rules**? (Detention, suspension, expulsion, referral to the office, loss of privileges, ineligibility, etc.)

\_\_\_\_\_ Yes (if yes, go to question 2b)

\_\_\_\_\_ No (if no, go to question 3a)

- b. **How many times** were you disciplined in **high school** each year?

\_\_\_\_\_ Freshmen

\_\_\_\_\_ Junior

\_\_\_\_\_ Sophomore

\_\_\_\_\_ Senior

#### 3. Extracurricular Participation

- a. Please indicate the **number of years** you have participated in each of the following activities in high school in the blanks provided. (Include spring and summer of this year.)

\_\_\_\_\_ Volleyball

\_\_\_\_\_ Basketball

\_\_\_\_\_ Track

\_\_\_\_\_ Cross Country

\_\_\_\_\_ Wrestling

\_\_\_\_\_ Golf

\_\_\_\_\_ Football

\_\_\_\_\_ Hockey

\_\_\_\_\_ Tennis

\_\_\_\_\_ Gymnastics

\_\_\_\_\_ Swimming

\_\_\_\_\_ Softball

\_\_\_\_\_ Baseball

\_\_\_\_\_ Field Hockey

\_\_\_\_\_ Soccer

\_\_\_\_\_ Cheerleader (Fall)

\_\_\_\_\_ Cheerleader (Winter)

## Appendix A, continued

### Student Behavior Survey

____ Solo Contest Band	____ Solo Contest Vocal	
____ Ensemble Contest Band	____ Ensemble Contest Vocal	
____ Concert Band	____ Orchestra	____ Chorus
____ Jazz Band	____ Marching Band	____ Musical
____ Swing Choir	____ Drama Club	____ Play
____ Speech (Large Group)	____ Speech (Small Group)	
____ Newspaper	____ Yearbook	____ Model UN
____ Student Council	____ Academic Competition	
____ Class Officer	____ Peer Helper	____ OC
____ FHA (Home Ec Club)	____ Art Club	
____ FFA	____ FTA (SES)	____ DECA
____ Computer Club	____ Science Club	____ FBLA

**Other Organizations, please list:**

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Appendix A, continued

Student Behavior Survey

**4. Homework**

- a. How many **hours** did/do you **usually** study **per week** outside of class?  
(You may include time utilized in study hall)

\_\_\_\_\_ Freshmen

\_\_\_\_\_ Junior

\_\_\_\_\_ Sophomore

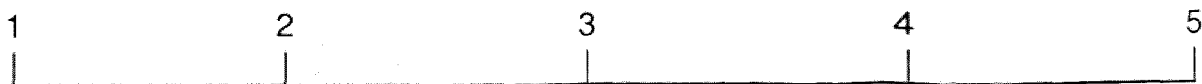
\_\_\_\_\_ Senior

- b. On a scale of one to five, rate the **typical quality of study time** by circling the appropriate number for each year in high school. A brief explanation of each rating is provided below.

**Rating Descriptions:**

- (1): Constant interruptions, distracting noise, little effort on tasks, and little productivity.
- (2): Frequent interruptions, noisy, some effort on tasks, and some productivity.
- (3): Occasional interruptions, some noise, acceptable effort on tasks, and fair productivity.
- (4): Few interruptions, little noise, good effort on tasks, and good productivity.
- (5): No interruptions, quiet, concentrated effort on tasks, and outstanding productivity.

**Freshmen**



**Sophomore**



Appendix A, continued  
Student Behavior Survey

**Junior**

1                      2                      3                      4                      5

|-----|-----|-----|-----|

**Senior**

1                      2                      3                      4                      5

|-----|-----|-----|-----|

**5. Job(s)**

a. Have you ever held a paying **job during the school year** in high school

\_\_\_\_\_ Yes (if yes, go to question 5b)

\_\_\_\_\_ No (if no, go to question 6a)

b. How many **hours per week** did you **usually** work during the school year each semester in high school.

**Freshmen:**                      \_\_\_\_\_ Fall                      \_\_\_\_\_ Spring

**Sophomore:**                      \_\_\_\_\_ Fall                      \_\_\_\_\_ Spring

**Junior:**                      \_\_\_\_\_ Fall                      \_\_\_\_\_ Spring

**Senior:**                      \_\_\_\_\_ Fall                      \_\_\_\_\_ Spring

Appendix A, continued

Student Behavior Survey

6. **Reading**

Please indicate the number of **hours** you **usually** read **per week**, other than homework, in the following categories. (Reading for content, not merely browsing)

<b>Freshmen:</b>	_____ Newspaper	_____ Magazines	_____ Books
<b>Sophomore:</b>	_____ Newspaper	_____ Magazines	_____ Books
<b>Junior:</b>	_____ Newspaper	_____ Magazines	_____ Books
<b>Senior:</b>	_____ Newspaper	_____ Magazines	_____ Books

7. Please indicate the number of **hours** you **usually** view television **per week** high school in each of the following categories.

<b><u>Freshmen</u></b>	<b><u>Sophomore</u></b>	<b><u>Junior</u></b>	<b><u>Senior</u></b>
_____ News	_____ News	_____ News	_____ News
_____ Sports	_____ Sports	_____ Sports	_____ Sports
_____ Education	_____ Education	_____ Education	_____ Education
_____ Series	_____ Series	_____ Series	_____ Series
_____ Movies	_____ Movies	_____ Movies	_____ Movies
_____ VCR Tape	_____ VCR Tape	_____ VCR Tape	_____ VCR Tape

## Appendix B

### Letter to Building Principal

To: (Principals' names)  
From: Bob Olson  
Re: Survey Information

Thank you for agreeing to participate in this study of student behaviors and academic achievement. The survey is designed to minimize disruption to the educational program and to office personnel.

The study includes four school districts, one from each sports classification of the Iowa Boy's School Athletic Association. Schools include (Schools' names).

Enclosed are materials necessary for administering the survey. These include survey instruments, consent forms, school information form, large envelopes and a survey administration instruction sheet. A brief description of each follows.

**Consent Form:** Participants are required by Drake University to read a consent form before becoming involved in research a project. This form affords students the option not to answer any or all of the survey. It also assures them that their responses will be held in strictest confidence.



Appendix B, continued  
Letter to Building Principal

**School Information Form:** This form seeks information specific to each school. This may be completed by the principal or other personnel knowledgeable of demographic information of the school. This needs to be returned with completed survey instruments.

**Survey Instrument:** The office will need to provide class rank information on each survey instrument of each student **before** survey administration. The attached blank name slip is provided for the office to insert the name of the student responding to each class rank. (Eg. The student ranked number one should have a "1" written on his/her survey instrument in the blank provided and his/her name written on the attached slip.) Students who have given consent for participation will complete survey instruments. The instrument should be administered to all students in the senior class. The total time for completion should be about five minutes. Students will be asked to return the survey instrument with the consent form and name slip removed. A student in each class section will be asked to collect the survey instruments, place them in a large envelope, and seal it before returning them to the classroom teacher.

Appendix B, continued

Letter to Building Principal

**Survey Administration Instruction Sheet:** Teachers asked to administer the Consent Forms and Surveys are provided instructions. Any instructor who teaches required courses to all seniors would be acceptable. Principals have the freedom to select the instructor(s) who is/are considered able to conduct the survey, with the least amount of disruption to the educational process.

Thank you again for your assistance in this project. The assistance provided by you and your school is invaluable. Please do not hesitate to contact me if you should have any questions.

Sincerely yours,

Bob Olson

## Appendix C

### Survey Administration Instruction Sheet

Thank you for taking time to administer this survey of student behaviors and academic achievement. The survey should take between 5-10 minutes to complete. It is essential that the directions for administration be followed very closely to assure uniform application of the instrument in all participating schools.

#### Materials Needed

Survey Instruments

Consent Forms

Large Envelope(s)

#### Project Information

Consent forms must be read aloud to the students before students are able to participate in the study. This assures that students understand that their participation, although encouraged, is completely voluntary.

The four page survey addresses seven student behaviors throughout their high school years (grades 9-12, if your high school is a 10-12 school, have the students recall behaviors of the ninth grade year in junior high school). The questions ask how much time was spent by each student on a variety of activities throughout high school. Since it is sometimes difficult to remember the amount of time spent on activities four years ago, the questions are divided into segments to assist the students when responding. It should be stressed that responses should be as accurate as possible. The following directions should be read after handing out the Consent Form.

**(School name), and three other high schools in Iowa have been selected to take part in a study of student behaviors and academic achievement conducted for Drake University. Seniors are asked to share information concerning the amount of time spent in seven activities which include homework, reading, extracurricular activities, and jobs. Two other areas include attendance and obedience of school rules. The entire survey should take only about five (5) minutes to complete. Please respond as accurately as possible.**

Appendix C, continued

Survey Administration Instruction Sheet

**Before being allowed to participate, Drake University requires seniors to read a Consent Form. Please find the sheet labeled Student Behaviors Survey, Consent Form, Drake University and read the form silently as I read it aloud.**

**(READ THE CONSENT FORM HERE)**

(After reading the consent form, request that name labels be removed. Consent forms are to be returned and used in another class section. READ THE STATEMENT BELOW.)

**Please return the consent form to be used in other classes and remove the student label from your survey now.**

(Appoint a student to collect the surveys and seal them in one of the large envelopes provided. READ THE STATEMENT BELOW)

**After completing your survey, give it to (student's name) and it will placed in a large envelope with the rest of the surveys. The envelope will then be sealed before being returned to me. Thank you in advance for your participation in this project. Your assistance is invaluable. You may begin answering the survey now.)**

After all sections have completed the surveys, return the sealed envelopes to (Principal's name.)

**(THANK YOU FOR YOUR TIME AND ASSISTANCE)**

## Appendix D

### Student Behaviors Survey Consent Form

You are asked to participate in a study of student behaviors. Seven questions concerning student behaviors in high school will be asked. Behaviors of interest include attendance, jobs, study habits, television viewing habits, reading habits, extracurricular participation and adherence to school rules. These behaviors will be correlated with student academic achievement to determine if any relationship exists.

As a participant, you will never be identified and your responses will be treated as a part of a large group of information, not individually. The information will be gathered through the use of a brief survey. The survey was designed not to harm participants physically, psychologically or socially. Participation is completely voluntary and you may elect not to answer any or all of the questions. By responding to the survey, you are indicating consent to participate.

The results of this study will be utilized in a dissertation prepared for Drake University. The results will be made available to educators for the purpose of improving student academic achievement. As a participant, you will also be given the opportunity to receive a brief summary of the final report. If you wish to receive a report summary, notify your high school principal and a copy will be made available to you.

Appendix D, continued

Student Behaviors Survey Consent Form

The name label attached to each survey instrument was used by the high school office to provide individual class rank information for each student.

Please remove the name label before completing the survey. After completing the survey, turn it in to the student designated by your teacher. This student will place the surveys in an envelope, seal it, and return it to your teacher. This procedure will assure that responses will be held in strictest confidence. The school and researcher will be unable to identify participants with their responses.

Thank you in advance for your help and cooperation.

## Homework

Homework in this study indicated a strong, positive relationship with class percentile rank. As students choose to study their homework in an environment conducive to study, class percentile rank was positively influenced. The degree of intensity of this behavior corresponded to the degree to which class percentile rank was influenced. Students who chose to do more homework in an environment conducive to study, tended to have the higher class percentile ranks.

The relationship between homework and class percentile rank indicated high significance with a P-value of .0001. Homework explained 6.8 percent of the variability of class percentile rank and 20.5 percent of the variability explained by all seven independent variables forced into the multiple regression equation. Although homework did not possess the ability to explain as much variability in class percentile rank as participation, the significance of the relationship warrants the attention of future researchers.

Homework has been identified in other studies as being a significantly related to student achievement (Foyle & Bailey, 1985; Ward, 1983). Although this study defined homework to include homework quality, the results were consistent with those of the past. These findings, together with the belief that homework possesses the ability to improve academic performance (National Commission on Excellence, 1983; Bell, 1984), supports the need for further study. Recommendations for the direction of those studies appear in a later section of this chapter.